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TELECOMMISSION STUDY3 (a)

INTERNATIONAL IMPLICATIONS OF TELECOMMUNICATIONS

The Role of Canada in Intelsat and Other Relevant
International Organizations



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INTRODUCTION

Telecommission Project Team 3(a) was established to study the international implications of telecommunications and the role of Canada in international organizations. The terms of reference under which it operated were the following:

- a) Examine existing Canadian participation in international organizations which have major telecommunications implications.
- b) Similarly, review international agreements and other arrangements concerning telecommunications affecting Canada.
- c) Consider what changes, if any, would improve the efficiency or effectiveness of Canadian participation in organizations or such agreements and arrangements.
- d) Study the broad implications for international telecommunications of the work of other project teams and maintain contact with the development of these items in their studies.
- e) What are Canada's international legal obligations concerning communications by virtue of treaties and agreements?
- f) Generally consider in broad outline any other international implications of telecommunications affecting Canadian interests.

It became quickly obvious that the fullest response to these terms of reference would represent a task which would greatly exceed, in scope and magnitude, that which had originally been intended by the Telecommission, and the time allotted for its completion. This same conclusion was independently reached by the Telecommission Secretariat and pursuant to its recommendations, limits were imposed on the depth to which the study of details would be carried. Such being the case, but to maximize the future usefulness of the study, it was considered most important to make specific recommendations as to the direction in which consequential and subsequent investigations might be pursued.

Hence, the Project Team strived at completeness in its response to terms of reference a), b), c), e) and f). The compilation of such basic data on existing Treaties and international organizations should be of great value to further studies and was, in any event, essential for the work which the Project Team had undertaken and which it was capable of accomplishing in the allotted time. Response to item d) was not possible due to the late availability of the required information.

A gratifying number of Government Departments, Industrial Organizations and individuals responded to the invitation to actively participate in the work of the Project Team. These included the following in alphabetical order (alternates are designated in brackets):

J.C. Delorme (Ann Booth)	Telesat Canada
E. Eliassen (D. Doran-Veevers)	Canadian Overseas Telecommunication Corporation (COTC)
D. Fulford	Department of External Affairs
H. Lawford	Faculty of Law, Queen's University
J.R. Marchand (V.C. MacDonald)	Department of Communications (D.O.C.)
E.B. Powell (C. Stewart)	Ministry of Transport (M.O.T.)
E.A. Saunders (C. Blakely)	Trans-Canada Telephone System (T.C.T.S.) and Telephone Association of Canada (T.A.C.)
J. Sharpe	Department of External Affairs
J.L. Wilson	Trans-Canada Telephone System (T.C.T.S.) and Telephone Association of Canada (T.A.C.)

In addition, the following indicated their desire to follow the progress of the studies and their willingness to comment on the results:

A. Curran	Northern Electric Company
C. Dalfen	Department of Communications
J.J. Dube	Canadian National Telecommunications
S. Moore	Canadian Broadcasting Corporation
A. Martin	Canadian Radio-Television Commission.

INTERNATIONAL ORGANIZATIONS

A study was made of the following governmental, non-governmental and professional and industrial international organizations, and in some cases their sub-organizations:

Governmental

The International Telecommunications Union (I.T.U.)

The General Secretariat of the I.T.U.

The International Frequency Registration Board (I.F.R.B.)

The International Radio Consultative Committee (C.C.I.R.)

The International Telephone and Telegraph Consultative Committee (C.C.I.T.T.)

The International Telecommunications Satellite Consortium (INTELSAT)

The Commonwealth Telecommunications Organization (C.T.O.)

The International Civil Aviation Organization (I.C.A.O.)

The Intergovernmental Maritime Consultative Organization (I.M.C.O.)

The United Nations Educational, Scientific and Cultural Organization (U.N.E.S.C.O.)

The United Nations Committee on the Peaceful Uses of Outer Space

Non-Governmental

The European Broadcasting Union

La Communauté des télévisions francophones

La Communauté radiophonique des programmes de langue française

The Commonwealth Broadcasting Union

The Asian Broadcasting Union

Professional and Industrial

The Committee on Space Research (C.O.S.P.A.R.)

The International Union on Science and Research (U.R.S.I.)

The Institute of Electrical and Electronics Engineers (I.E.E.E.)

The American Institute of Aeronautics and Astronautics (A.I.A.A.)

The study consisted in describing the basic purpose and role of the organization and the nature of Canada's interest and participation, in assessing the observed effectiveness both of the organization itself and of Canadian participation, and in making suggestions for improvement in any aspect where it was considered desirable.

A large number of the organizations studied are members of the United Nations family. As a charter member of the United Nations and one of the larger contributors to the program of the United Nations and the Specialized Agencies, and as a member of the governing bodies of all the Specialized Agencies with interests in the field of telecommunications, Canada is expected to contribute towards the achievement of the objectives of these organizations. Conversely, Canada like any other member, expects to derive certain benefits from its participation. While the benefits to be derived are of primary interest to government departments other than External Affairs, or to Government Agencies, or to non-government entities which have responsibilities in the relevant field, the Department of External Affairs has an overall interest in seeing that Canadian participation is of a high standard; that the ends pursued are consistent with national objectives; that the participation is efficient and effective and that, in particular, the interests of developing countries are taken account of.

Pursuant to the Government's foreign policy review, a set of booklets entitled "Foreign Policy for Canadians" has been issued. The following extracts from the "United Nations" booklet would seem pertinent to this report:

"It should be a basic aim of Canadian policy to strengthen machinery for co-ordinating and rationalizing the activities of the United Nations family of organizations in order to eliminate wasteful duplication and to facilitate effective programme planning so that the resources of the United Nations system as a whole will be spent to greatest advantage."

In respect of international cooperation in the peaceful uses of satellite systems, it is proposed that:

- "a) Canada encourage the ITU to participate actively in the orderly development of international coordination and of standards and associated regulatory needs, including allocation of frequencies for present and future satellite communications systems and the establishment of conditions to safeguard 'in orbit' positions, particularly over the equator;

- b) Encourage the Specialized Agencies such as UNESCO, WMO and ICAO to take account of the need for the best use of satellite systems in their own fields of jurisdiction and at the same time encourage greater coordination within the United Nations;
- c) join in the study of supplementary international arrangements to foster international cooperation and regulation of aspects of space communications not adequately covered by existing organizations; and
- d) actively develop legal principles which might govern the activities of states in the exploration and use of outer space and, in particular, to promote the conclusion of an appropriate agreement on liability for damage caused by the launching objects into outer space."

The same principle, developed with respect to satellite communications, could be generally applied to efforts in the broader field of telecommunications.

In considering proposals for changes in existing arrangements and for improved effectiveness in the activities of international organizations, the interests of the technical departments and agencies and of the industry will be of primary importance particularly when such proposals relate to technological or operational aspects. Such proposals should, however, be viewed in the broader policy context of Canada's commercial and political interests. Proposals relating to a particular organization or project should be examined to ensure that they are consistent with overall national objectives and with positions taken in other bodies. A fuller consultation should be achieved prior to the negotiations undertaken at meetings of the United Nations, its specialized agencies and other international organizations where matters of concern to the industry are considered; particularly where the industry will be charged with the practical implementation of the decisions taken.

Since most of the studies are rather extensive, they all appear as annexes to this report. This section therefore confines itself to general comments on each organization and will direct the more avid reader to the relevant Annex. Contributions by individual members have been reflected to the maximum extent possible in the report and have, therefore, not been included as such.

THE INTERNATIONAL TELECOMMUNICATIONS UNION (ITU):

The I.T.U. is not only the oldest of the United Nations family of specialized agencies, but may well be considered as the most important international organization in the field of inter-

national telecommunications. In fact, its activities in fostering the rational development and utilization of international telecommunications services, and in promoting the orderly and efficient use of the radio-frequency spectrum, underscores its fundamental role, particularly in respect of the practical aspects of international telecommunications services and facilities. Moreover, its membership of 138 attests to the interest, importance and reliance which it enjoys within the world community of nations. Canada is presently on the 29-member Administrative Council of the I.T.U. More detail on the I.T.U. is presented in Annex A to this report.

The Minister of Communications has on several occasions expressed his views on the need to study the present role, structure and modus operandi of the I.T.U. in order to strengthen its role and enable it to function more effectively, particularly in view of the rapid advances in technology, the increased usage of existing services, the introduction of new services, and the increasing competition for the use of the limited radio-frequency spectrum. While certain improvements can be effected at Administrative Conferences such as the one on Space Communications which will take place in 1971, the first opportunity to promote changes of a fundamental and structural nature will be at the Plenipotentiary Conference which has been scheduled for 1973. To this end, the Department of Communications has set up a working group which will review the present I.T.U. Convention in depth and elaborate proposals for improving the I.T.U.'s ability to meet its objectives and discharge its responsibilities more effectively.

There is a feeling in the industry that it should be more fully consulted in respect of I.T.U. matters, particularly those resolved at Administrative Conference which are of special interest to them. Regular consultation mechanisms should be envisaged to accomplish this, well in advance of the Conferences concerned. A case in point is the World Administrative Radio Conference on Space Telecommunications which is scheduled for June 1971; the Department of Communications has prepared draft proposals which were sent to industry for comment in September 1970, before finalizing the Canadian submission to the I.T.U. Secretariat.

Canada has participated regularly in the Conferences of the I.T.U. Canadian representation appears to have been effective and influential. Smaller countries of the world have looked to Canada for guidance and leadership as is evidenced by Canada being elected to serve on the Administrative Council since its beginning in 1947. Representatives from Canada have often been requested to serve as committee chairmen and as chairmen of the Conferences themselves. This has permitted Canadian views and aims in radio spectrum management and other areas of telecommunications, to influence the decisions and recommendations of conferences, thereby setting the climate where spectrum space, so necessary for the

development of communications in Canada, was readily available and the Canadian telecommunications industry was not penalized by restrictive or demanding regulations which are not in the best interests of Canada.

In respect of the Telephone Regulations, which has not yet been signed by Canada, it should be noted that the International Telegraph and Telephone Committee of the I.T.U. has approved, for submission to the next World Administrative Telegraph and Telephone Conference, a draft text of revised Telephone Regulations. This draft has eliminated the details contained in the present Regulations and it is anticipated that the telephone industry in Canada will recommend that Canada accept them as new Regulations at that Conference.

If Canada's influence and growth in the field of international and national communications is to continue and, communications are vital to the growth and prosperity of any country, then our participation in all phase of the I.T.U. endeavour must continue. Only in this way can we continue to play a leading role in the development of international telecommunications.

The various activities of the I.T.U. are carried forward through four permanent organs. These are the following:

- a) General Secretariat: This is basically an administrative body assisting the Secretary General in his role as the top elected official of the Union. The activities of the General Secretariat are detailed in Annex B.
- b) International Frequency Registration Board (I.F.R.B.): The purpose of the I.F.R.B. is to register the frequency assignments made by the countries Members of the I.T.U. and to advise Members on questions relating to the best use of the radio-frequency spectrum and to the minimizing of interference between radio systems. Further details will be found in Annex C.

As part of the general review of the I.T.U. alluded to in the preceding section on the I.T.U., the role and activities of the I.F.R.B. will have to receive particular attention since it is called upon to give effect to certain provisions of the Convention and Radio Regulations and promote adherence by all Members to the principles evoked therein.

- c) The International Radio Consultative Committee (C.C.I.R.): The CCIR was established to study technical questions relating to radiocommunications of all kinds, and to issue recommendations in response thereto. It now is

also concerned with questions relating to television transmission, in cooperation with the CCITT. The CCIR operates basically through 11 international study groups to each of which has been assigned a specific area of interest. Further details are available in annex D.

Canada started to participate, initially mainly as an observer, at Warsaw, 1956 (2 delegates) and Los Angeles, 1959 (3 delegates). Our role then started to increase considerably when we became aware of the need to protect our interests. This became very apparent at the 1962 Interim Study Group IV (Space Communications) meeting in Washington and even more so at the Xth Plenary Assembly in Geneva, 1963. The wide range of subjects required a total attendance of 19 engineers and technical officers from government departments, crown corporations, manufacturers and common carriers. The attendance at Oslo, 1966 was 27. Attachment 4 gives a list of the names and affiliations of the Canadian delegates at the Final meetings of the Study Groups in Geneva, 1969. The value of the CCIR has been well recognized by other organizations outside the Government and over the years many of them have been asked to participate in its work, e.g. the Telephone Association of Canada, the Railway Association of Canada, Canadian Overseas Telecommunication Corporation, National Research Council, Canadian Broadcasting Corporation, Northern Electric Co., Electronic Industries Association, RCA Limited, Lenkurt Electric, Telesat Canada, etc.

Through extensive pre-Conference meetings, either in full body or in small Working Parties, a good understanding is developed by all delegates of the Canadian objectives and our best approach in achieving them.

At the international meetings, the Canadian delegation has shown excellent teamwork, and has been able to speak with a single voice presenting coordinated viewpoints in the different engineering committees. The extensive preparatory work greatly enhances the effectiveness of our participation.

The principles on which our participation is based include the following:

- a) generate a climate of understanding and cooperation; and
- b) present competently well thought-out proposals and solutions.

The former is intended to predispose others in our favour while the latter creates confidence in Canadian technical talent, technology and products.

It is well noted that new and developing countries are seeking advice from those Administrations who exhibit leadership and engineering competence at CCIR Conferences. As an example of our demonstrated competence in the field of satellite communications the I.T.U. Secretary General invited Canada (amongst only a few nations) for a meeting 14-16 January, 1970 at I.T.U. Headquarters, to assist in the analysis and preparation of a report on the comparative economic aspects of various satellite broadcasting systems. As another example, our presentation at the CCIR and discussions with other delegates have led to enquiries with Canadian industries as possible suppliers for the satellite T.V. broadcasting plan embarked upon by the Indian Government.

Evidence of Canadian leadership and competence at C.C.I.R. Conferences is given in Attachment 5 which lists the chairmanships and secretary positions held by Canadian delegates at the Final meetings of the Study Groups in Geneva, 1969. In assessing the relative importance of these chairmanships, it should be noted that:

- a working group is a subdivision of a study group;
- a sub group is a subdivision of a working group;
- a sub sub group is a subdivision of a sub group.

Attachment 6 gives a list of the terms of reference of these various groups. In addition, the XIIth Plenary Assembly (New Delhi, 1970) appointed Mr. J.R. Marchand (DOC) as Chairman of the C.C.I.R. Special Joint Study Group Meeting (Geneva, February 1971) established in preparation for the Space Conference.

The main benefits to Canada which accrue from participation in the C.C.I.R. are:

- a direct voice in the elaboration of spectrum utilization principles within assigned communication bands as well as an indirect voice in influencing changes to Radio Regulations pertaining to radio spectrum usage through the advisory role played by the C.C.I.R. at Radio Conferences;
- a direct voice in the development of preferred technical characteristics for radio systems to be used in fixed and mobile applications, broadcasting, monitoring, navigational aids, radio paging, communications satellites, radio relays, etc.;

- interference protection for our exceptionally large national telecommunications investments;
- the development of technical standards which will enhance the marketability of Canadian equipment;
- the demonstration of Canada's competence and leadership in the field of radiocommunications, which will assist Canadian industries in their drive to increase their exports to other countries.

We should continue to be involved in C.C.I.R. activities giving particular emphasis to those areas where benefits to Canada might accrue. At the moment, the most urgent problems to be studied are:

- examination of the effect of an increased power flux curve for satellite systems on our terrestrial microwave systems;
- thin-route communication satellite systems;
- system parameters for earth exploration satellites;
- feasibility of frequency sharing by satellite broadcasting systems and present terrestrial services in the 800 MHz and 2500 MHz bands;
- coordination angle between satellites in the geo-stationary orbit (IWP 4/1) and minimum earth antenna requirements;
- propagation data at 12 and 20 GHz;
- scintillation data at UHF frequencies:
 - a) for the Canadian thin-route satellite systems;
 - b) for UHF mobile satellite systems;
- finalization of chapter 5 of the I.T.U. Monitoring Handbook (Receivers);
- data on wide-band terrestrial PCM systems, frequency sharing considerations, spectrum requirements;
- assessment criteria for television picture quality;
- establishment of radio-relay antenna patterns for interference calculations.

The study of the above Questions will require continued participation by DOC, CBC, NRC, Telesat, COTC, TAC, RAC, EIA, RCA Ltd and N.E. Co.

The Project Team is reasonably satisfied with the results achieved by the C.C.I.R. generally, and of the benefits which Canada has derived from its participation in particular. The level of activity within the C.C.I.R. is not expected to decrease, particularly in view of the rapid technological advances taking place and the introduction of new services such as those provided by satellites. In view of Canada's own involvement in these new advances, Canadian participation cannot be relaxed, but should be strengthened where possible and relevant.

While the CCIR has recently adopted a new and slightly simplified Study Group structure, and made a few improvements in its methods of operation, it is felt that further improvements should be sought in view of the foreseeable increase in the C.C.I.R.'s workload on the one hand, and taking into account improved working methods on the other hand.

- d) The International Telephone and Telegraph Consultative Committee (C.C.I.T.T.): The C.C.I.T.T. was established to study technical, operating and tariff questions relating to telegraphy and telephony, and to issue recommendations in response thereto. It is now also concerned with questions related to television and data transmission. The C.C.I.T.T. operates basically through 16 Study Groups, although it has also instituted a number of special Study Groups, some in cooperation with other international organizations, for the pursuit of specific studies. Further details are presented in Annex E.

Canadian participation in the C.C.I.T.T. provides the means for ensuring to the greatest extent possible that the recommendations of the C.C.I.T.T. are compatible with the technical characteristics of the Canadian telecommunications network and Canadian operating practices. Incompatibilities in this regard can result in heavy cost penalties to Canadian subscribers and the operating organizations involved.

Canadian participation also makes it possible to submit for international discussion objectives on standards of service in keeping with the expectations of Canadian subscribers. The Canadian program of aid to developing countries is strengthened by such contacts.

By participating in the work of the C.C.I.T.T., specialists of the Canadian government, of Recognized Private Operating Agencies and of Industrial & Scientific Organizations

demonstrate their competence in telecommunications matters. Such demonstrated competence can have a beneficial effect on the efforts of Canadian suppliers of telecommunications equipment to increase sales in foreign markets, as well as reflecting in other forums of discussion, such as INTELSAT, UNESCO meetings concerning communications in media that affect science and education.

In general, Canadian industry feels that there are no major problems with the existing arrangements governing the participation in C.C.I.T.T. Thus, there is no request for the more formal national coordination which is the practice in Canadian C.C.I.R. participation. A form of coordination may be required at times in establishing a strategy to be followed in the face of strong regional pressure being exerted in favour of specific conclusions at some important study questions. At the international level, politics and commercial interests occasionally enter the technical work of the C.C.I.T.T. to an undesirable degree. While this is unfortunate, it is probably unavoidable. With increasing Canadian participation in the work of the C.C.I.T.T., Canadian delegates and representatives are learning to accommodate to this situation. Stronger European coordination through regional study arrangements in advance of critical C.C.I.T.T. meetings has been in evidence recently.

In the case of the Canadian RPOA's which have established and operate the Canadian telecommunications network, major problems or conflicts generally do not occur since their fields of service mainly complement each other. When they do, the representatives of the Department of Communications note the problem and propose alternatives. Existing arrangements encourage and facilitate participation by competent Canadian organizations in work that is of direct concern to them and the Country. At the same time, The Department of Communications, through its control at Plenary Assemblies and through its own participation and monitoring of C.C.I.T.T. Study Group activities, can ensure that Canadian participation is in the national interest.

While the Project Team is not generally dissatisfied with the results obtained by the C.C.I.T.T., and with the effectiveness of Canadian participation, it does appear that the C.C.I.T.T. is impeded in its work by an outdated Study Group structure which was established in 1956 and is not entirely responsive to the variety of problems it must deal with today; evidence of this is provided by the substantial number of questions which must be studied

by more than one study group, the number of Study Group meetings and joint Working Parties required, and the relatively large number of special study groups and autonomous working groups which have had to be established. Its working methods seem to be in need of considerable streamlining in order to expedite the studies undertaken and achieve results on a more timely basis. The C.C.I.T.T., and to some extent the C.C.I.R., has tended to issue its recommendations (which, by many, are considered somewhat as "standards") on the basis of long established practices -- an approach which had lead in some cases to the adoption of a multiplicity of "standards", and which is not always conducive to the most efficient and economic use of facilities providing international telecommunications services. While some improvements have been observed in recent years, there is the risk that the C.C.I.T.T. may become simply overwhelmed by new developments such as those related to data transmission, for example. In short, it must not only be made more effective but also more forward-looking so that it may issue recommendations which will serve to guide future new developments, rather than follow them.

It was with the above considerations in mind that Canada took the lead in instituting, at the fourth Plenary Assembly in late 1968, a special international working group whose general mandate should lead to specific recommendations for improving the structure and working methods of the C.C.I.T.T. Unfortunately, the work of this group has not yet really begun and Canada, through its representatives in the various C.C.I.T.T. activities, should press for more urgent consideration of this matter.

Urgent problems under study in the C.C.I.T.T. include the following:

i) Technical:

- Transmission performance criteria for frequency-multiplexed communications satellites and time-division on cable, microwave and satellite systems are under urgent investigation. Of the thirty-two data transmission questions put to study, twenty-two are designated "urgent". In the near future transmission criteria to be met by domestic satellite systems wishing to be connected to the world network will have to be examined. International agreement on pulse code modulation transmission standards is proving extremely difficult. The differences between AT&T and the European standards have proved impossible to close in some important aspects thus far.

- Switching problems now urgent include criteria to be maintained when the world telephone network includes communications satellites offering access on demand, rather than the fixed hierarchical network heretofore planned. Then there are requirements of a new kind, such as very short call set-up times for computer communications. At the same time, technology took a big step with successful experiments in time-division switching.

- ii) Operating and Accounting: The advent of customer-to-customer dialling has outdated the simple direct circuit and operator call ticketing procedures, but the automatic system brings other new problems such as accounting for the use of alternate circuit facilities and transit facilities. The introduction of computer switching of public telegrams is proceeding well, but there are still some problems in it.
- iii) Telephone and Telegraph Regulations: These are under major review, the significance for Canada being that as a result Canada may be able to sign the Telephone Regulations part of the I.T.U. Convention, from which it has so far abstained.

THE INTERNATIONAL TELECOMMUNICATIONS SATELLITE CONSORTIUM (INTELSAT):

INTELSAT was formed in 1964 when eleven countries, including Canada, entered into Agreements establishing interim arrangements for a global commercial communication satellite system.

Since then, membership has grown to 77 and essentially global coverage has been achieved by the successful placement and operation of a variety of geostationary satellites (fixed, relative to the surface of the Earth) over the Atlantic, Indian and Pacific Oceans.

One of the main features of such a system is its ability to permit more direct telecommunications services (telex, telephony, television and data transmissions) throughout the world. It has not only brought high quality international service to areas previously not served in this respect, but has also expanded the service available to those areas already served by submarine cable and radio-relay systems. One of the unique features is the ability to make available television programs on a real-time and global basis.

Notwithstanding these noteworthy achievements, there is a need to review the existing Agreements. Indeed, such a review was anticipated in the Interim Arrangements and negotiations are presently underway to establish Definitive Arrangements for INTELSAT. While it would certainly be an extensive task, at this time, to fully

explain the present state of these negotiations, and the Canadian position on each and every point raised in the related discussions, it can generally be stated that Canada seeks to clarify the role of the organization and the services which it may provide, improve its structure as an international organization, broaden international participation (including the management) without sacrificing efficiency, and naturally maximize the benefits to Canada and other Members, in accord with Canada's national objectives and policy concerning international affairs. More specifically, the Canadian overall position includes the following:

- a) the prime objective of the organization should be the provision of public international telecommunication services (telegraphy, telephony, television program transmission, data);
- b) the organization could also provide domestic and regional telecommunication services, and specialized services (aeronautical, broadcasting, etc.), subject to terms and conditions approved by the Assembly (meeting of government representatives), and provided that the ability of INTELSAT to fulfill its prime service objective is not impaired;
- c) the Assembly of representatives of the member governments, above and beyond the responsibilities conferred on a full meeting of all signatories (operating entities designated by government) should have a voice in determining the general policy, and approve the long-term program, of the organization;
- d) the management function, presently fulfilled by the Communications Satellite Corporation should be transferred gradually within a specified time limit to an internationally-staff management group under the direction of a Director-General.

Further details on the operation of INTELSAT under the Interim Arrangements are given in Annex F.

THE COMMONWEALTH TELECOMMUNICATIONS ORGANIZATION (C.T.O.):

While cooperative arrangements among those countries presently forming the Commonwealth for the establishment of international telecommunications services began in the late 1800's, formal arrangements bringing together the majority of Commonwealth members for the establishment of a common system first came into force in 1949 with the incorporation of the Commonwealth Telecommunications Board. The Canadian Overseas Telecommunication Corporation was also formed at that time as a crown corporation to participate for Canada in the establishment and operation of the Commonwealth system. Since then, these arrangements have been modified with the establishment of

the Commonwealth Telecommunications Organization in 1968. The next Commonwealth Telecommunications Conference is expected to be held in Ottawa in 1971.

Further details on these arrangements are given in Annex G.

Through participation in these arrangements, Canada has been able to develop its external telecommunication services to a degree which would have been difficult to attain working in isolation. While the present arrangements are yielding satisfactory results, one of the major problems associated therewith is that not all services are covered, notably services by long range wideband cable systems and services by satellite. Because of members' diverse interests, this situation can cause conflicts between systems and members. Council is presently attempting to develop a unified accounting system which would embrace all traffic and all media.

THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (I.C.A.O.):

The I.C.A.O. Convention came into force in 1946. It is a specialized agency of the United Nations and Canada has been a member of the Organization and of its Council since its inception.

While I.C.A.O., as implied, is an aviation oriented organization, radiocommunications play an important role in respect of safety and general transportation efficiency. Canada has always been very active in I.C.A.O. and participates in the financing, implementation, maintenance and operation of several aeronautical communications systems providing essential navigation and other services, such as over the Atlantic Ocean, to the aircraft of any country in the world.

By virtue of geography, Canadian airspace is utilized by the busiest intercontinental traffic involving control of the oceanic portion of the routes as well as providing for integration with domestic traffic. In addition, Canadian carriers operate routes to many countries in Europe, the Pacific and the Caribbean. There is therefore a vital interest in I.C.A.O. with a continuing need for active participation in all its activities.

The present provisions for establishment of standards and recommended practices on a world-wide basis permits keeping abreast of rapidly changing technology and the system of regional planning provides for timely implementation of services and facilities. There is also adequate provision for future planning normally provided through the establishment of special committees or panels of experts. Coordination with other specialized agencies such as the International Telecommunications Union (I.T.U.) and the Intergovernmental Maritime Consultative Organization (I.M.C.O.) is provided for and representation to and by these organizations is a matter of normal procedure.

Whereas the telecommunications aspects of I.C.A.O. constitute only one of the fifteen annexes to the Convention and for which MOT has full responsibility it is nevertheless a very significant aspect and calls for close cooperation between MOT and DOC.

Further details are presented in Annex H.

THE INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION (I.M.C.O.):

The I.M.C.O. Convention came into force in 1958. I.M.C.O. is a specialized agency of the United Nations and Canada has been a member of the Organization since its establishment and is presently a member of its Council. This organization is also covered here because of the role of radiocommunications in support of maritime safety and transportation generally.

Canada is an active participant in the various bodies of I.M.C.O. and M.O.T. has established a working group to review the working methods of the organization.

The current budget for the organization is relatively modest when compared with other international organizations and Canada's contribution is assessed at 2% amounting to \$17,000 for 1970. Through participation in the organization it is then possible to influence carriers operating under foreign flags in meeting the standards acceptable to Canada when operating in Canadian waters.

The major problem which confronts Canada is the degree of influence which can be achieved where we do not support a foreign going merchant fleet. It is nevertheless of major advantage to continue membership of the organization to ensure protection of our existing national requirements and to plan for the future.

Responsibility for I.M.C.O. matters lies with M.O.T. but major coordination with D.O.C. on telecommunications will be necessary even when I.M.C.O. has developed its own capability to deal with technological changes.

Further details are presented in Annex I.

THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (U.N.E.S.C.O.)

U.N.E.S.C.O. was formed as a specialized agency of the United Nations in 1946; Canada became a member that year and is presently a member of its Executive Board. The organization, as the title implies, has a large range of interests; it studies a wide variety of international and national problems, either with its own headquarters staff or with missions of experts formed to deal with specific studies and is particularly active in the developing countries.

U.N.E.S.C.O.'s interest in telecommunications was greatly enhanced with the advent of space communications, and particularly with the possibilities of satellite broadcasting. The Department of External Affairs, and more recently the Department of Communications, have followed U.N.E.S.C.O.'s activities in this field quite closely and have participated in the meetings of the organization which have been convened to discuss questions related to the free-flow of information and the role of new technology in education and in cultural exchanges.

U.N.E.S.C.O. and its officials have demonstrated great initiative and energy. Canada should continue and possibly increase its participation in U.N.E.S.C.O. in the field of communications to assist it in achieving its aims and to ensure that its activities dovetail effectively with those of other international organizations.

Further details are given in Annex J.

THE UNITED NATIONS COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE:

This committee was established by the United Nations General Assembly in 1959. In 1967, it became particularly interested in the overall implications of direct broadcasting by satellites and in 1968, a working group was established to study the matter in depth. Canada from the outset has been one of the major contributors to this study which is not yet completed.

Further details can be obtained in Annex K to this report.

INTERNATIONAL BROADCASTING ORGANIZATIONS:

A number of international broadcasting organizations, generally regional in character, have been established over the years and in which the Canadian Broadcasting Corporation, either as a full member or as an associate member, participates. These include:

- a) European Broadcasting Union;
- b) Communauté des télévisions francophones;
- c) Communauté radiophonique des programmes de langue française;
- d) Commonwealth Broadcasting Conference;
- e) Asian Broadcasting Union.

Further details on the C.B.C.'s activities and participation are provided in Annex L.

SCIENTIFIC AND ENGINEERING ORGANIZATIONS:

A number of organizations which are either truly international in their institution, or have become so by their wide international membership, play a valuable if not essential role in the widespread and timely exchange of technical and scientific information in the field of telecommunications and related activities. The foremost include the following:

- a) Committee on Space Research;
- b) International Union on Science and Research;
- c) Institute of Electrical and Electronics Engineers;
- d) American Institute of Aeronautics and Astronautics.

While participation in the first organization is mainly at the government level, participation (and membership) in the others has a strong and widespread industry and professional element. A brief discussion of these organizations is given in Annex M.

TREATIES

CANADA TREATY SERIES REVIEW

The Canada Treaty Series was reviewed and those treaties related to telecommunications identified and are listed in Annex N, along with relevant information and an analysis of each treaty.

For ease of reference, an index is provided at the beginning of Annex N which classifies the treaties under the given broad categories. Following the index, a legend is presented which, for standardization and simplification, identifies each entry in the subsequent analyses.

It should be emphasized that the analyses as presented are very preliminary and further consultation would be required with the parties concerned to validate the conclusions reached. However, any comments concerning the analyses should be made known to the Department as this will stimulate consultations to clarify and remedy, if required, any unsatisfactory situation.

A few comments of a general nature can be offered. Some of the agreements included in the Canada Treaty Series were achieved through the simple exchange of notes between the two countries concerned. Such agreements become effective usually on the date the notes exchanged, or on some future date mentioned therein. Rarely is an expiry date mentioned nor are any terminating arrangements clearly outlined; the latter of course can be achieved by subsequent consultations and agreement to that effect. In the case, however, of agreements reached pursuant to the basis of some

broader international Convention or Regulation, the status of such agreements have simply been overcome by events. For example, a number of agreements gave a role to M.O.T. when it was responsible for implementing the provisions of the Radio Act; this responsibility now devolves on D.O.C. Such occurrences in some instances have been overlooked. A periodic review of treaties and other arrangements would be desirable and procedures for the handling of deficiencies and of proposals for amendments or new provisions, are suggested later in this report.

While this section deals mainly with formal treaties, it will be noted that other international arrangements (Conventions, Agreements, Regulations) which are not in the Treaty Series, but which are binding on Canada, have been included.

On the question whether individual arrangements should be continued in force, amended or terminated, it is considered that the most useful advice and guidance in this respect should come from the departments, agencies, or other entities responsible for the implementation of the arrangements. Apart from details concerning legislation specifically enacted to give effect to a treaty, the Treaty Register does not normally contain information concerning their practical implementation.

CONCLUSIONS

GENERAL

It emerges from these studies that Canada is an active participant in all international organizations concerned with telecommunications, that this participation is justified in terms of our national interest, should be reviewed periodically, and improved in accordance with Canada's national policy objectives. It seemed to the Project Team that the following suggestions concerning future action merited examination:

INTERNATIONAL ORGANIZATIONS

- a) Consultation with industry, preparatory to the meetings of the United Nations, its agencies and other international organizations might be improved, to increase industry's participation in the formulation of national policy, particularly where it is relevant to industry's role in carrying out the provisions of international arrangements.
- b) Through its participation in the relevant international organizations, Canada might ensure a greater coordination between these organizations in certain areas such as satellite communications, and thus improve the overall effectiveness of these organizations in achieving their aims and maximize the benefits to be derived from the sum total of their activities.

- c) The structure and procedures of the I.T.U. might be reviewed so as to improve its ability to execute its role in international telecommunications and that proposals to this effect be submitted to the World Administrative Conference on Space Telecommunications in 1971 and to the next Plenipotentiary Conference in 1973.
- d) Within the context of the review of the I.T.U., particular attention might be given to the I.F.R.B., whose role in giving effect to certain provisions of the Radio Regulations is expected to become more complex with the increased introduction of new radiocommunications services and competition for use of the radio-frequency spectrum.
- e) In view of rapid advances in radiocommunications and Canada's interest and involvement in these advances on the one hand, and the related studies undertaken by the C.C.I.R. on the other hand, Canadian participation in the C.C.I.R. might be strengthened where possible and relevant.
- f) In view of the foreseeable increase in C.C.I.R.'s study programs, Canada might seek to further improve its working structure and methods, so that the results will be available on a more timely basis.
- g) Canada might press for a more active and expeditious study of the structure and working methods of the C.C.I.T.T. in the context of the special study program instituted to that effect at the IVth Plenary Assembly of the C.C.I.T.T. in November 1968.

TREATIES

- a) Departments, agencies and industry might review the list of treaties with a view to making specific proposals regarding the disposition of treaties of interest to them, if such action should in their estimation appear warranted.
- b) The following procedures for dealing in the future with proposals, either for amending existing arrangements, or for the development of new bilateral or multilateral treaties or agreements dealing with telecommunications matters, might be instituted:
 - i) Inter-departmental/agency consultative arrangements would be agreed upon which would provide for early discussion of proposals - presumably under the aegis

of the Department of Communications - with respect to the technical matters to be dealt with.

- ii) The Department of External Affairs would be included in such discussions at an early stage so that the relevant functional and geographical divisions can be consulted. The Legal Division could review texts of proposed treaties and take the steps necessary for the actual conclusion, amendment or termination of the treaty.
- iii) The responsible ministers, including the Secretary of State for External Affairs, should concur in any memorandum to Cabinet recommending the conclusion, amendment or termination of a treaty. This will require prior consultation with the departments and agencies concerned.
- iv) The draft of any proposed treaty or agreement would be submitted to the Department of External Affairs for review in the Treaty Section of the Legal Division.
- v) The signature, ratification, amendment or formal denunciation of a Treaty by Canada requires the authority of an Order in Council. The Submission to Council requesting such authority would in every case be made by the Secretary of State for External Affairs, with the concurrence, where appropriate, of any other minister concerned. The Submission to Council and covering memorandum to the Minister would be prepared in the division of the Department of External Affairs responsible for the subject matter, in consultation with the responsible department or agency. The Submission would be cleared in draft with the Treaty Section of the Department of External Affairs.

INTERNATIONAL TELECOMMUNICATION UNION

(I.T.U.)

INTRODUCTION

The International Telecommunication Union is the oldest of the international organizations having been established at a meeting in Paris in 1865. Canada became a member in 1907. At the time it was the International Telegraph Union and radio communication did not enter the picture until 1903, when a preliminary radio meeting was held in Berlin, followed by the first radio conference also in Berlin in 1906, when the first "Radio Telegraph Convention" was drawn up and the first Radio Regulations established. From these early beginnings the ITU has come to what it is today; a Union of 137 member countries with its permanent Headquarters located at Geneva, Switzerland.

The aims of the Union are to maintain and extend international co-operation for the improvement and rational use of telecommunications of all kinds; to promote the development of technical facilities and their most efficient operation with a view to improving the efficiency of telecommunication services, increasing their usefulness and making them, so far as possible generally available to the public. To these ends the Union:

- a) effects the allocation of the radio frequency spectrum;
- b) co-ordinates efforts to eliminate harmful interference;
- c) fosters collaboration among its members for the establishment of rates at levels as low as possible;
- d) assists in the creation, development and improvement of telecommunication equipment and networks in new and developing countries;
- e) promotes the adoption of measures for ensuring the safety of life through the co-operation of telecommunication services;
- f) undertakes studies, makes regulations, adopts resolutions, recommendations and opinions, collects and publishes information concerning, telecommunication matters for the benefit of the members.

The Convention:

The basic instrument of the International Telecommunication Union is the Convention completed by the following sets of Administrative Regulations:

Telegraph Regulations
Telephone Regulations
Radio Regulations
Additional Radio Regulations

Plenipotentiary Conference:

The supreme authority of the Union is the Plenipotentiary Conference which is held approximately every five years, its main responsibility being to revise the Convention, determine the general policies for fulfilling the purposes of the Union described above, review budgetary matters concerning the operation of the Union, approve the accounts of the Union, elect the Secretary-General, Deputy Secretary-General, elect the members of the Union who are going to serve on the Administrative Council, revise if necessary agreements between the Union and other international organizations, deal with such other telecommunication questions as may be necessary and set the date and place of the next Plenipotentiary Conference.

Administrative Conferences:

In addition to the Plenipotentiary Conference, Administrative Conferences composed of World Administrative or Regional Administrative Conferences are held to consider specific telecommunication matters, i.e. matters dealing with the space, aeronautical mobile, maritime mobile, fixed, broadcasting, radiodetermination and other terrestrial radio, telegraph and telephone services.

The main function of these Administrative Conferences is to amend the Regulations relative to the subject or subjects being considered by the Conference. The discussions at these conferences are mainly of a technical or administrative nature; however, where new regulations are adopted which involve the implementation of new standards and techniques, the economic impact must also be considered.

Administrative Council:

As mentioned above under the responsibility of the Plenipotentiary Conference an Administrative Council, consisting of 29 members of the Union, is elected to act, on behalf of the Plenipotentiary Council in the interval between such conferences.

The Administrative Council meets at least once a year in Geneva and in brief is responsible for the co-ordination of the work of the Union and supervising the administrative functions of the Union. It reviews and approves the annual budget, arranges for the convening of plenipotentiary and administrative conferences and in general acts for the plenipotentiary conference. The discussions at these meetings are mainly of an administrative and financial nature; however, technical matters are involved especially where the approval of the agenda for Administrative Conferences is concerned.

BACKGROUND

The first measures to govern radio communications having international scope were embodied in the "Radio Telegraphic Convention" drawn up at Berlin in 1906 and which was adhered to by the Dominion Government in 1907. A revised International Radio-telegraph Convention was signed by Canada at London in 1912.

Again with a view to consolidating international control of the various types of communication services the International Telecommunications Convention of Madrid 1932 was drawn up and regulations governing all classes of communications were annexed thereto. It was at this time that the International Telegraph Union founded in Paris in 1865 had its title changed to the present "International Telecommunication Union".

Canada was among the countries that signed the Radio-communications Regulations at the Madrid Convention of 1932. It was not until 1937 that Canada signed the Telegraph Regulations. Canada has not yet signed the Telephone Regulations, since in the opinion of the telephone industry in Canada the regulations are too detailed in nature and too restrictive to be in the best interests of telephone communications in Canada.

In 1947 major changes in the ITU Radio Regulations and a revision to its Convention was effected by a Conference in Atlantic City. Every area of these Regulations was expanded in particular the provisions relating to Frequency allocations. This Conference also created a new International Frequency Registration Board (IFRB) which is responsible for controlling the use of the radio spectrum throughout the World. The Administrative Council of the ITU was also created by the 1947 Conference. It supervises the Administrative functions and co-ordinates the activities of the ITU. Canada has been a member of the Council since its inception. ITU Conferences for the purpose of revising its Convention and the Regulations annexed thereto have been held in 1948-51-52-59-63-64-65-66 and 1967. These Conferences have played a significant role in the improvement of telecommunications throughout the World and in particular for Aeronautical and Maritime purposes, Space Telecommunications and Radio Astronomy.

STRUCTURE

There are four permanent organs within the Union:

- a) A General Secretariat carries out the every day operation of the Union under the direction of a Secretary-General who is responsible to the Administrative Council for all the Administrative and Financial aspects of the Union's activities. A Deputy Secretary-General assists the Secretary-General and is responsible to him.
- b) The International Frequency Registration Board (IFRB) whose activities include the orderly recording of frequency assignments made by the different countries and to furnish advice to members on the use of the spectrum and on interference problems.
- c) The International Radio Consultative Committee (CCIR) is a technical committee established to study technical and operating questions relating specifically to radiocommunications and to issue recommendations on them.
- d) The International Telegraph and Telephone Consultative Committee (CCITT) is a technical committee established to study technical, operating and tariff questions relating to telegraphy and telephony and to issue recommendations on them.

PREPARATORY WORK FOR CONFERENCES

Under Section 5 of the Radio Act the responsibility for international negotiations respecting telecommunication matters lies with the Department of Communications. Therefore, in preparing for ITU Conferences and Meetings the International Telecommunications Branch initiates and co-ordinates the efforts of all concerned.

Well in advance of a conference a committee or working group is formed to co-ordinate the Canadian input. Problems are defined, recommendations are drafted, and input to the conference, in the form of working papers containing Canadian proposals, is prepared for approval by the Deputy Minister in keeping with overall Canadian policy.

This preparatory work is extensive and detailed, and requires considerable research and study in depth to ensure the best possible presentation of our requirements by the Canadian delegations to these conferences.

The preparatory work for the CCIR and CCITT is covered in greater depth elsewhere in this brief, because of the extensive Canadian participation in the work of these organs.

THE GENERAL SECRETARIAT OF THE I.T.U.

The General Secretariat is under the direction of a Secretary-General who is assisted by a Deputy Secretary-General, both of whom are normally elected by the Plenipotentiary Conference. The Secretary-General is responsible for all administrative and financial services of the ITU including the staff of the specialized secretariats of the CCI's and IFRB. He is directly responsible to the Plenipotentiary Conference and to the Administrative Council during the interval between conferences. The Secretariat is responsible for carrying out the directions of the Plenipotentiary Conference and of the Administrative Council which include the custody and maintenance of records and archives, collection and publication of statistical and technical publications and in general, provides the machinery for fulfilling the main purpose of the Union which is to maintain and extend international cooperation for the improvement and rational use of telecommunications of all kinds.

In addition the Technical Cooperation Department of the General Secretariat fulfills the responsibility of the Union in the technical cooperation field. The technical cooperation activities of the Union are carried out under the United Nations Development Program (UNDP). The UNDP program has two main components: technical assistance and special fund. The technical assistance component is designed to give expert advice to promote technical development, facilitate the exchange of technical skills and train national technicians. The special fund component provides sustained assistance in the telecommunications field, including centers for technical training, test and development centers, applied research institutes, services and studies. In the past, there have been attempts to establish a regular ITU budget for this activity. However, most members, Canada included, continue to resist this proposal to prevent uncoordinated activities and uneconomical duplications of effort. There is also the funds-in-trust arrangement whereby a government provides funds for a specific project and a U.N. organization is selected as the executing agency. The ITU utilizes the above-mentioned methods of rendering aid and in addition seeks the assistance of the more developed countries in supplementing the UNDP program by arranging to provide additional training by convening seminars and providing lecturers.

THE INTERNATIONAL FREQUENCY REGISTRATION BOARD (IFRB)

The IFRB is composed of five independent members elected by the World Administrative Radio Conference for a period of not less than five years. The Board elects annually a Chairman and Vice-Chairman from among its members. The essential duties of the Board which is associated by a specialized secretariat are, inter alia, to effect an orderly recording of frequency assignments, to facilitate effective management of the radio spectrum, to furnish advice to members on invitation from members to resolve cases of harmful interference, technical planning for revised conferences, participation in an advisory capacity in conferences and meetings dealing with the radio spectrum and the study on a long term basis of the utilization of the radio spectrum.

Recently, the role and effectiveness of the ITU has been questioned and discussed and Canada has been one of the countries which feels that the ITU has filled its role in an effective manner recognizing, however, that improvement is always welcome, particularly in the field of telecommunications which involves rapid changes in technology. It is our desire to both strengthen the role and the effectiveness of the ITU in its continuing role as the U.N. specialized agency responsible for all telecommunication matters. Recognizing that this is the responsibility of the Plenipotentiary Conference to be held in 1973, we intend in our preparations for this conference to thoroughly examine the organization and the role of the IFRB and hopefully to strengthen its functional responsibility in a manner which will in turn strengthen the role of the Union.

INTERNATIONAL RADIO CONSULTATIVE COMMITTEE(CCIR)

1.0 GENERAL

The International Radio Consultative Committee (CCIR) was established in 1927 at the Washington Radio Conference. It is one of the four permanent organs of the International Telecommunications Union (ITU). Its duties are: to study technical and operating questions relating specifically to radiocommunication and to issue recommendations on them. Attachment I gives definitions of symbols and expressions used in the present brief.

2.0 PARTICIPATION

All member countries of the ITU, recognized private operating agencies and scientific or industrial organizations can participate in the work of the CCIR.

3.0 METHODS OF WORK

The CCIR studies technical telecommunication subjects or "Questions" referred to it by:

- the Plenipotentiary Conference of the ITU;
- Administrative Conferences;
- the Administrative Council;
- the International Telegraph and Telephone Consultative Committee (CCITT);
- the International Frequency Registration Board (IFRB);

in addition to those decided upon by its Plenary Assembly (every three years) or, in the interval between Plenary Assemblies, approved by correspondence by at least twenty Members and Associate Members of the ITU.

The Plenary Assembly normally meets every three years and draws up a list of the above Questions, the study of which would lead to improvements in international radio communications. These Questions are then entrusted to a number of Study Groups, composed of experts from different countries. The Study Groups normally hold an Interim meeting during the period which begins

12 months after the close of the Plenary Assembly and terminates 12 months prior to the opening of the next one. They hold a Final meeting from 5 to 2 months prior to the opening of the next Plenary Assembly. The Study Groups develop and approve Study Programmes derived from existing Questions as well as Reports derived from these Questions and Study Programmes. They also draw up Recommendations which are submitted to the next Plenary for approval. If the Assembly adopts these Recommendations, they are published. The Study Groups may also establish Interim Working Parties to expedite the Study of specialized Questions.

There are presently 11 Study Groups, 24 Interim Working Parties and two CCIR/CCITT Joint Commissions administered by the CCIR. Attachment 2 gives the breakdown of these groups and the nature of the Canadian involvement.

In addition, the CCIR is participating in one Joint CCITT/CCIR Study Group, the World Plan Committee, 4 Regional Plan Committees and 3 Joint Special Autonomous Working Parties, all administered by the CCITT.

The CCIR is presently studying 162 Questions, carrying out 159 Study Programmes and has adopted 325 Reports and 181 Recommendations. A total of approximately 750 documents were prepared for the final meetings of the Study Groups in September-October 1969. The last Plenary Assembly (Delhi, 1970) adopted:

- 27 new Questions;
- 37 new Study Programmes;
- 102 new Reports
- 28 new Recommendations;
- amendments to 59 existing Questions;
- amendments to 59 existing Study Programmes;
- amendments to 160 existing Reports;
- amendments to 86 existing Recommendations;

The discussion at the meetings is mainly technical and the Recommendations have an important influence on the activities of telecommunications engineers and technicians, operating administrations and companies, manufacturers and designers of equipment throughout the world. Particular attention also is paid to the study of questions and the formulation of recommendations directly connected with the establishment, development and

improvement of telecommunications in new or developing countries in both the regional and international fields.

4.0 CANADIAN PARTICIPATION

The Canadian input into the CCIR is provided via the Canadian National Organization for CCIR (CNO/CCIR) which is composed of Study Groups subdivided into Working Parties, using the same model as the CCIR. The Working Parties - which are composed of representatives from government departments, crown corporations, manufacturers and common carriers - prepare the first draft of the Canadian documents. These draft documents are then submitted to the Study Groups concerned. They are then submitted to an Executive Committee of the CNO/CCIR for further approval. Finally, the Canadian documents are submitted to the Senior Committee of the DOC for final approval before furtherance to Geneva.

The Executive Committee of the CNO/CCIR was established in February, 1968 to bring together senior engineering and management representatives from government departments and industry to organize Canadian CCIR activity. These representatives are expected to have the authority necessary to assign people, time and other resources to this work and to approve the results. This Committee is chaired by DOC. A list of present members and their positions is given in Attachment 3.

5.0 COST OF PARTICIPATION

The cost of participation for the Canadian Government is covered by its contribution of 18 units to the regular budget of the ITU.

RPOA's and ISO's contribute separately as follows:

RPOA's:

<u>Organization</u>	<u>No. of units</u>	<u>Approx. \$ Can.</u>	<u>Participation began</u>
CAB	1/2	937	Feb. 2/65
CBC	1/2	937	Feb. 26/62
COTC	1	1875	April 1/64
RAC	1/2	937	Jan. 1/63
TAC	3	5625	Jan. 1/62
Telesat	1/2	1875	June 18/70

<u>ISO's:</u>			
<u>Organization</u>	<u>No. of units</u>	<u>Approx. \$ Can.</u>	<u>Participation began</u>
EIA	1/2	937	Jan. 1/62
N.E. Co.	1/2	937	Jan. 1/66
RCA Ltd.	1/2	937	Mar. 4/63

In addition, Government departments, RPOA's and ISO's must provide for the full cost of participation of their representatives at both national and international meetings.

ABBREVIATIONS AND DEFINITIONS OF ACTIVITIES

DEFINITIONS

CAB	Canadian Association of Broadcasters
CAE	Canadian Aviation Electronics
CBC	Canadian Broadcasting Corporation
CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
CMTT	CCIR/CCITT Joint Commission for Television Transmission
CMV	CCIR/CCITT Joint Commission on Vocabulary
COTC	Canadian Overseas Telecommunication Corporation
CNO/CCIR	Canadian National Organization of the International Radio Consultative Committee
CRC	Communications Research Centre
DND	Department of National Defence
DOC	Department of Communications
DTI	International Telecommunications Branch
DTR	Telecommunications Regulations Branch
EIA	Electronic Industries Association
EMR	Department of Energy, Mines and Resources
IFRB	International Frequency Registration Board
ISO	Industrial or Scientific Organization
MOT	Ministry of Transport
N.E. Co.	Northern Electric Company
NRC	National Research Council
RAC	Railway Association of Canada
RCA Ltd.	Radio Corporation of America Ltd.

DEFINITIONS

RPOA	Recognized Private Operating Agency
TAC	Telephone Association of Canada
UTC	Coordinated Universal Time
Monitoring	<p>This activity involves:</p> <ul style="list-style-type: none">- attendance at conferences as an observer;- examination of the documents received from other Administrations or the Secretariat of the International Radio Consultative Committee;- assessment of the above documents, in consultation with the Canadian entities concerned, to find out whether any of these Draft proposals, Study Programmes, Questions and, especially, Draft Recommendations affect Canadian interests and require action.
Active	<p>This activity involves:</p> <ul style="list-style-type: none">- preparation of Canadian documents and related studies;- attendance at conferences as active participants;- monitoring, as defined in the present Annex.
MHz	Megahertz: one million cycles per second
kHz	Kilohertz: one thousand cycles per second

CCIR ORGANIZATION'S OPERATION

A. STUDY GROUPS

<u>Study Group</u>		<u>Canadian Involvement*</u>	
No.	Name	Unit	Comments
1	Spectrum utilization Monitoring	DOC/DTI DOC/DTR COTC TAC	Active Active Active Active
2	Space research and radioastronomy services	DOC/DTI DOC/CRC NRC MOT	Active Active Active Active
3	Fixed services below about 30 MHz	DOC/DTI DOC/DTR TAC	Active Active Active
4	Fixed services using satellites	DOC/DTI DOC/DTR DOC/CRC DND NRC CBC TAC RAC RCA Ltd. N.E. Co. EIA Telesat	Active Active Active Active Monitoring only Monitoring only Active Active Active Active Active Active
5	Propagation in non-ionized media	DOC/DTI DOC/DTR DOC/CRC	Monitoring only Active Active
6	Ionospheric propagation	DOC/DTI DOC/DTR DOC/CRC CBC	Monitoring only Active Active Active

* See Attachment 1 for list of abbreviations and explanation of comments.

<u>Study Group</u>		<u>Canadian Involvement*</u>	
No.	Name	Unit	Comments
7	Standard frequency and time-signal services	DOC/DTI NRC CAE Ltd. EMR	Monitoring only Active Active Active
8	Mobile services	DOC/DTI DOC/DTR DOC/CRC MOT DND TAC EIA RAC	Active Active Active Active Active Active Active Active
9	Fixed services using radio-relay systems	DOC/DTI DOC/DTR CBC RCA Ltd. N.E. Co. TAC EIA RAC	Active Active Monitoring only Active Active Active Active Active
10	Sound broadcasting services	DOC/DTI CBC RCA Ltd. CAB	Active Active Active Active
11	Television broadcasting service	DOC/DTI CBC CAB TAC RCA Ltd.	Active Active Active Active Active
CIV	CCIR/CCITT Joint Commission on Vocabulary	DOC/DTI	Monitoring only
CMTT	CCIR/CCITT Joint Commission for television and sound transmissions	DOC/DTI DOC/DTR CBC TAC RAC CAB N.E. Co.	Active Active Active Active Active Active Active

* See Attachment 1 for list of abbreviations and explanation of comments.

B. INTERIM WORKING PARTIES

<u>Working Party</u>		<u>Canadian Involvement*</u>	
No.	Name	Unit	Comments
1/1	Classification and designation of emissions	DOC/DTI	Monitoring only
1/2	Radio interference	DOC/DTI	Monitoring only
1/3	Typical receivers	DOC/DTI	Monitoring only
4/1	Technical factors affecting the efficient use of the geo-stationary satellite orbit	DOC/DTI RCA Ltd.	Active Active
5/1	Tropospheric propagation data for broadcasting, space and point-to-point communications	DOC/DTI	Monitoring only
5/2	Influence of the non-ionized regions of the atmosphere on wave propagation	DOC/DTI	Monitoring only
5/3	Prediction of phase and amplitude of ground waves	DOC/DTI	Monitoring only
6/1	Sky-wave field strength and transmission loss at frequencies between the approximate limits of 1.5 and 40 MHz	DOC/DTI	Monitoring only
6/2	Revision of atmospheric radio noise data	DOC/DTI	Monitoring only

* See Attachment 1 for list of abbreviations and explanation of comments.

<u>Working Party</u>		<u>Canadian Involvement*</u>	
No.	Name	Unit	Comments
6/3	Basic long-term ionospheric predictions	DOC/DTI DOC/CRC	Monitoring only Active
6/4	Sky-wave propagation at frequencies between approximately 150 and 1500 kHz	DOC/DTI	Monitoring only
6/5	Sky-wave propagation at frequencies below 150 kHz	DOC/DTI DOC/CRC	Monitoring only Active
6/6	Fading of signals propagated by the ionosphere	DOC/DTI	Monitoring only
6/7	Short-term predictions of operational parameters for ionospheric radio communications	DOC/DTI DOC/CRC	Monitoring only Active
6/8	VHF Propagation by Sporadic E	DOC/DTI	Monitoring only
7/1	UTC system	DOC/DTI NRC	Monitoring only Active
7/2	Forms of expression of all kinds and the conditions of their use in the standard frequency and time signal service	DOC/DTI NRC	Monitoring only Active
9/1	Hourly mean noise objective	DOC/DTI TAC	Monitoring only Active
10/1	Determination of the subjective loudness of a broadcasting programme	DOC/DTI	Monitoring only

* See Attachment 1 for list of abbreviations and explanation of comments.

<u>Working Party</u>		<u>Canadian Involvement*</u>	
No.	Name	Unit	Comments
11/1	Assessment of the quality of pictures in television systems	DOC/DTI CBC	Monitoring only Active
CIV/1	Terms and definitions	DOC/DTI	Monitoring only
CIV/2	Terms relative to reliability	DOC/DTI	Monitoring only
CIV/3	Terms and definitions relating to sound and video recording	DOC/DTI	Monitoring only
PLEN/2	Possible broadcasting satellite systems and their relative acceptability	DOC/DTI	Active

* See Attachment 1 for list of abbreviations and explanation of comments.

CNO/CCIR Executive Committee Representatives

<u>Organizations</u>	<u>Representatives</u>	<u>Addresses</u>
Canadian Association of Broadcasters (CAB)	Mr. W.A. Caton	Technical Consultant, C.A.B., 85 Sparks St., Box 627, Stn. B., Ottawa, Ontario
Canadian Broadcasting Corporation (CBC)	Mr. R.D. Cahoon	Vice-President, Engineering, C.B.C., P.O. Box 478, Terminal "A", Ottawa 2, Ontario
Canadian Overseas Telecommunications Corporation (COTC)	Mr. D.V. Doran-Veevers	Executive Assistant to Vice-President, Engineering and Operations, C.O.T.C., 625 Belmont Street, Montreal 101, P.Q.
Department of National Defence (DND)	Mr. J.R. Eaton	Director of Commu- nications Systems Engineering, Canadian Forces Head- quarters, D.N.D. Ottawa 4, Ontario Attn: J.R. Eaton (DCSE 2-2)
Electronic Industries Association of Canada (EIA)	Mr. D.V. Carroll	President, TMC Canada Ltd., R.R. #5, Ottawa, Ontario
Northern Electric Company Limited (N.E. Co.)	Mr. A. Curran	Manager, Systems Studies, N.E. Co. Ltd., P.O. Box 3511, Stn. C, Ottawa, Ontario

<u>Organizations</u>	<u>Representatives</u>	<u>Addresses</u>
Railway Association of Canada (RAC)	Mr. G.R. Groome	Senior Radio Engineer, Telecommunications Dept., Canadian Pacific Railway Company, Place du Canada, Montreal 3, P.Q.
Radio Corporation of America Ltd. (RCA Ltd.)	Mr. J.G. Leahy	Manager, Commu- cations Systems, RCA Limited, 1001 Lenoir Street, Montreal 30, P.Q.
The Telephone Association of Canada (TAC)	Mr. J.L. Wilson	Chairman, Technical Committees, T.A.C., 1060 University, Montreal, P.Q.
Department of Communications (DOC)	Mr. W.J. Wilson	Director, Telecommunications Regulations Branch, Berger Building, 100 Metcalfe Street, Ottawa 4, Ontario
Department of Communications (DOC)	Mr. J.R. Marchand (Chairman)	Director, International Tele- communications Branch, Berger Building, 100 Metcalfe Street, Ottawa 4, Ontario
Department of Communications (DOC)	Mr. F.G. Perrin (Secretary)	Chief, International Arrange- ments Division, Berger Building, 100 Metcalfe Street, Ottawa 4, Ontario

Name and Affiliations of the
Canadian Delegates at the Final Meeting of the
CCIR Study Groups in Geneva, 1969

Head of delegation

A.G.W. Timmers	Department of Communications, International Telecommunications Branch, Berger Building, 100 Metcalfe Street Ottawa 4, Ontario
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Deputy head of delegation

W.A.C. Schultz	Department of Communications, International Telecommunications Branch, Berger Building, 100 Metcalfe Street Ottawa 4, Ontario
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Delegates

E.R. Allan	The Telephone Association of Canada, 1050 Beaver Hall Hill, Montreal, P.Q.
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F. Banks	Northern Electric Laboratories, Department 8332, P.O. Box 3511, Station C, Ottawa, Ontario.
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Dr. B.C. Blevis	Department of Communications, Communications Research Centre, Shirley Bay, Ottawa, Ontario.
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G.C. Brooks

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J.J. Brownlee

Canadian Overseas
Telecommunications
Corporation
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G. Courtemanche

Department of Communications,
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B. Duke

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R.C. Eldridge

The Telephone Association
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Montreal, P.Q.

I. Godier

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Ottawa, Ontario.

L.C. Gooddy

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Montreal, P.Q.

H.F. Hannay	Northern Electric Co. Ltd., P.O. Box 3511, Station c, Ottawa, Ontario
Dr. J.T. Henderson	National Research Council, Applied Physics Division, Ottawa 7, Ontario
P. Hervieux	The Telephone Association of Canada, 1050 Beaver Hall Hill, Montreal, P.Q.
J.A. Jarvis	Northern Electric Co. Ltd., P.O. Box 3511, Station C, Ottawa, Ontario
D. Jung	RCA Victor Ltd., Space Systems Division, 1001 Lenoir Street West, Montreal, P.Q.
C. Lemieux	The Telephone Association of Canada, 1050 Beaver Hall Hill, Montreal, P.Q.
B.W. Cosman	The Telephone Association of Canada, 1050 Beaver Hall Hill, Montreal, P.Q.
J. Myles	Department of Transport, Telecommunications and Electronics Branch, Ottawa 4, Ontario
L. Petrie	Department of Communications, Communications Research Centre, Shirley Bay, Ottawa 2, Ontario
A. Piechota	The Railway Association of Canada, 151 Front Street W., Toronto, Ontario
E.B. Powell	Department of Transport, Telecommunications and Electronics Branch, Ottawa 4, Ontario

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Montreal, P.Q.

Chairmanships held by Canadian delegates

<u>Affiliation</u>	<u>Name</u>		<u>Working Group</u>	<u>Sub Group</u>	<u>Sub sub group</u>
	<u>Chairman</u>	<u>Secretary</u>			
Department of Communications	A.G.W. Timmers	G.C. Brooks	IX-D		
	W.A.C. Schultz	J. Myles	IV-D		
	G. Courtemanche		XIII-E		IV-A-1-c
	G.C. Brooks			IX-D-5	
	G. Tutt			XIII-A--(1)**	
	B.C. Blevis			IV-A-2	
Department of Transport	L. Petrie		VI-E		
	E.B. Powell				IV-D-4--(1)**
Telephone Association of Canada	J. Myles			IV-D-3	
	R.C. Eldridge			XIII-C-4 and XIII-C-5	
	L.C. Goody			CMTT-A-2	
Canadian Broadcasting Corporation	C. Lemieux			XIII-B-3	
	C.A. Siocos			XI-E-2	
R.C.A. Ltd.	D. Jung				IV-A-4-a
Northern Electric Co.	F.M. Banks	A. Piechota***		IV-B-1	
	I. Godier			IX-A-2	
	A. Curran	H.F. Hannay	CMTT-A		

* See Attachment 6 for the terms of reference of the various groups.

** No specific symbol was assigned to these groups.

*** Affiliated with the Railway Association of Canada.

Terms of reference of various groups

<u>Symbol</u>	<u>Terms of reference</u>
IV-A-1-c	To correct Tables in draft Report L.3.a(IV) on the feasibility of sound and television broadcasting from satellites.
IV-A-2	Choice of frequencies, orbits and systems.
IV-A-4-a	To amend draft Report L.2m(IV) on the use of pre-emphasis in frequency - modulation systems.
IV-B-1	Coordination procedures and mechanics of interference characteristics.
IV-D	Communication and radiodetermination satellite services for aircraft and ships.
IV-D-3	Communication satellite systems for aircraft and ships.
IV-D-4--(1)	To study the human-machine interface problem of a radiocommunication satellite service for aircraft and ships.
VI-E	Basic observations and long-term predictions for ionospheric mapping.
IX-A-2	Radio-relay systems for the transmission of pulse-code modulation and other types of digital signals.
IX-D	Radio-relay system characteristics.
IX-D-5	To amend draft Report E.5.d(IX) on preferred characteristics for the simultaneous transmission of television and a maximum of four sound channels.
XI-E-2	Recommended characteristics for collective and individual antenna systems for domestic reception of signals from terrestrial transmitters.
XIII-A--(1)	To expand an existing Question and draft a new Report on the preferred technical characteristics of single-sideband equipment.

<u>Symbol</u>	<u>Terms of reference</u>
XIII-B-3	To draft a new Report on radio-paging systems.
XIII-C-4	To draft a new Recommendation for the preferred characteristics of systems using linked compressor and expandor techniques.
XIII-C-5	To draft a new Study Programme to study in more detail the actual performance of a "lincompex" system.
XIII-E	Operational requirements for maritime and aeronautical services using satellite techniques
CMTT-A	Television transmission standards.
CMTT-A-2	To revise Parts 1 and 5 of draft Report E.5.t (CMTT) on the transmission characteristics of television circuits intended for use in international connections.

INTERNATIONAL TELEGRAPH AND TELEPHONE CONSULTATIVE COMMITTEE

(C.C.I.T.T.)

1. GENERAL

One of the two Consultative Committees of the International Telecommunications Union which according to its charter has as its other permanent organs a General Secretariat and the International Frequency Registration Board (I.F.R.). Article 3 of the Convention states that the seat of the Union shall be at Geneva. In the headquarters buildings at Number 2 rue Varembe which was built for the I.T.U., the Director of the C.C.I.T.T. and his small specialized secretariat can be found.

The C.C.I.T.T. was formed at the end of 1956 as a result of the merger of two older Consultative Committees of the I.T.U. These were the International Telephone Consultative Committee (C.C.I.F.) and the International Telegraph Consultative Committee (C.C.I.T.).

2. MEMBERSHIP

Any country or group of territories which ratifies the I.T.U. Convention is entitled to participate in all conferences of the Union and shall be eligible for election to any of its organs. Thus the C.C.I.T.T. has as members

- a) "of right, the administrations of all Members and Associate Members of the Union";
- b) "any recognized private operating agency which, with the approval of the Member ... recognizing it

applies to participate in the work of the Committee. Any scientific or industrial organization engaged in the study of Telecommunications problems or the design or manufacture of equipment for Telecommunications services may be admitted to participate in an advisory capacity, with the approval of the administration of the country concerned. The approved request from a recognized private operating agency is addressed to the Secretary General of the I.T.U. whereas the request from a scientific or industrial organization is addressed to the Director of the C.C.I.T.T. The International Organizations carry on work related to telecommunications may be admitted to participate in the C.C.I.T.T. in an advisory capacity providing that a majority of the Members of the Union agree to the requests of such an International Organization.

The Government of Canada, formerly through the Department of Transport and currently through the Department of Communications, has participated in the work of the C.C.I.T.T. since its formation at the end of 1956. The Government of Canada also participated in the work of the C.C.I.F. and C.C.I.T. prior to the merger of these bodies into the C.C.I.T.T.

A number of Canadian organizations hold membership in the C.C.I.T.T. as Recognized Private Operating Agencies or participate as Scientific or Industrial Organizations. These are indicated below together with the dates on which their association with the C.C.I.T.T. began.

Recognized Private Operating Agencies (RPOA's):

Telephone Association of Canada (TAC)	1 Jan 1957
Canadian Overseas Telecommunication Corporation (COTC)	19 Aug 1963
Railway Association of Canada (RAC)	1 Jan 1964
Telesat Canada	1 Jul 1970

Scientific or Industrial Organizations (ISO's):

Northern Electric Company Ltd (N.E. Co.)	1 Jan 1962
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Prior to their membership in the C.C.I.T.T., the TAC was also a member of the C.C.I.F. since 1954. In the case of COTC and RAC, these organizations which preceded it through representation on Canadian Government Delegations. Montreal Engineering Company Limited participated as a Scientific or Industrial Organization from 1 September 1964 to 31 July 1969.

3. PURPOSES OF THE C.C.I.T.T.

It is the function of the C.C.I.T.T. to formulate recommendations for the development and improvement of telecommunications on a worldwide basis. This entails studying the design, operation and maintenance of networks and facilities which participate in the provision of international telecommunications. National networks and international facilities are therefore involved. Its duties are set by the I.T.U. Convention as follows:

"The duties of the International Telegraph and Telephone Consultative Committee (C.C.I.T.T.) shall be to study technical, operating and tariff questions relating to telegraphy and telephony and to issue recommendations on them."

"In the performance of its duties, each Consultative Committee shall pay due attention to the study of questions and to the formulation of recommendations directly connected with the establishment, development and improvement of telecommunication in new or developing countries in both the regional and international fields."

"At the request of the countries concerned, each Consultative Committee may also study and offer advice concerning their national telecommunication problems. The study of such problems should be in accordance with the following:

The questions to be studied by the C.C.I.T.T., on which it shall issue recommendations, shall be those referred to it by the Plenipotentiary Conference, by an Administrative Conference, by the Administrative Council or by the C.C.I.R., in addition to those decided upon by the Plenary Assembly of the C.C.I.T.T."

Specifically, the C.C.I.T.T. issue recommendations concerning the international telephone and telegraph services. These recommendations deal with matters such as transmission objectives, traffic routing, numbering plans, signaling arrangements, maintenance, operation, tariff principles and the settlement of accounts. The recommendations also deal with the technical and operating aspects of other services such as data, facsimile, visual telephone, audio program and television.

Transmission systems are also studied by the C.C.I.T.T. In the case of communication satellite systems, for example, recommendations are issued regarding their use and integration into the world telecommunications network.

The C.C.I.T.T. also maintains a small test laboratory in Geneva, Switzerland.

The Plenary Assembly of the C.C.I.T.T. is authorized to submit to the administrative telegraph and telephone conference proposals arising directly from C.C.I.T.T. recommendations or from findings on questions under study. The C.C.I.T.T. also developed through the World Plan Committee and associated regional plan committees a General Plan for the international telecommunication network to help in planning international telecommunications services. The Plan Committee shall receive questions the study of which is of particular interest to new or developing countries and refers them to the C.C.I.T.T., and to the C.C.I.R. which is associated in the World Plan Committee.

4. RIGHTS AND OBLIGATIONS

The Government of Canada (Department of Communications) as a signatory to the I.T.U. Convention exercises Canada's vote in the C.C.I.T.T. When the issue concerns the study program or the Recommendations, Canada's vote reflects a consensus of industry and government telecommunications policy. In general, formal voting occurs at plenary sessions and not at study group meetings. When a question related to Canadian foreign policy arises advice is sought from the Department of External Affairs according to circumstances. The last occasion of this kind was at the Plenary Assembly in 1962 when the question of telephone numbers for Eastern Germany arose. As the allocation of such a number might imply diplomatic recognition it could not be settled purely on technical grounds. It is the custom of the C.C.I.T.T. to restrict formal voting to administrative matters such as the election of the director.

RPOA's and ISO's do not have voting rights but RPOA's can be authorized by their Governments to vote on the latter's behalf. The authorization of the Minister of Communications would be required for each meeting at which this was to be done and the representatives of the Canadian RPOA's as a whole and regardless of their number could exercise Canada's vote.

Participants of all categories in the C.C.I.T.T. have the right to contribute documents to the study of questions set in the authorized program of the C.C.I.T.T. and to receive the documents of the study groups in which they register. List of the study groups and plan committees is attached. As a condition for participation of national recognized agencies, all countries expect some coordination at the national level.

In the matter of obligations, Canada, as a country with one of the most highly developed and advanced networks in the world, has a moral obligation to participate in the work of the C.C.I.T.T. It is, therefore, incumbent on the Department of Communications and the Canadian organizations which have established and operate the Canadian telecommunications network, to maintain an active participation in the C.C.I.T.T.

5. METHOD OF PARTICIPATION

The C.C.I.T.T. organizes its work in the form of questions which are assigned to study groups. The questions are studied during study periods which last from 3-4 years. At the end of a study period, a Plenary Assembly is held which reviews the work carried out, approves the recommendations issued, sets down the questions to be studied in the succeeding study period, establishes the study groups necessary for the study of the questions and appoints the Director of the C.C.I.T.T., the Study Group Chairmen and Vice-Chairmen.

Governments, RPOA's or ISO's contribute to the study of questions that are of particular importance to them. This is done through the preparation of documents containing their views and submitting these documents to the C.C.I.T.T. which in turn distributes copies to the membership. The amount of co-ordination of such documents at the national level is a national responsibility.

At appropriate intervals during a study period, study group meetings are held to discuss the documents contributed, develop replies to questions and draft recommendations where indicated. In general, from one to three meetings are held by most study groups within a study period. The meetings are mainly held in Geneva but occasionally some are held in member countries; e.g., meetings in Canada (Montreal) in 1962 and 1970.

At the end of each study period, the recommendations and opinions of the C.C.I.T.T. are published by the I.T.U. These publications are in the form of books and manuals.

Within the current study period which extends from 1968 to 1972, some 300 questions are to be dealt with. These are distributed among 36 study groups and working parties. In addition, there are 5 Plan Committees which are concerned with the planning of international facilities in different regions of the world.

Three positions of Study Group Chairmen and Vice-Chairmen are currently filled by Canadians, two from the Department of Communications and one from the Ministry of Transport. A representative of TAC was nominated by the Canadian Delegation at Mar del Plata in 1968 but failed to be elected.

In the work of the study groups, the Canadian participants in the C.C.I.T.T., i.e., Government RPOA's and ISO's usually document their views, in their own name, on those C.C.I.T.T. questions which are relevant and important to their activities. As there is not formal review of these contributions in Canada before they are sent to Geneva the participating agencies are expected to review with other recognized agencies in Canada any item in which there is common interest. Copies are sent to the Department of Communications and other affected agencies. This is done in time for review and if the contribution is felt by other interested agencies to be controversial in respect to an area of common interest between two Canadian RPOA's it is the prerogative of the Department of Communications to cause the contribution to be withdrawn.

In the debates at study group meetings, the Canadian participating organizations also express their views in their own names. Naturally there are occasions when other countries ask to know what is Canada's position as a country and Canadian participants have to have some answer to that question. If a representative of the Department of Communications is present, the question is expected to be answered by him. At Plenary Assemblies, all Canadian participants form part of the Government Delegation which is headed by a member of the Department of Communications. Representatives of Canadian RPOA's and ISO's, when invited to be on the Canadian Delegation, act in the capacity of advisers to the Head of the Delegation and assist in the capacity of advisers to the Head of the Delegation and assist him in arriving at the Canadian opinion should voting be required. When the Department of Communications is unable to send a qualified participant to a study group meeting, Canadian participants are sometimes asked by the Department of Communications to report on vital issues as they observe them in the study group meeting.

6. COST OF PARTICIPATION

Canadian RPOA's and ISO's make direct contributions to the C.C.I.T.T., the amount per unit-class being settled at the Administrative Council each year. A Department of Communications representative attends. The annual contributions currently made are indicated below and are in keeping with those made by comparable participants in other

countries, the number of units being selected on a voluntary basis. In the same way each country is free to elect the size of its national contribution made by its government to the I.T.U. The Canadian Government is presently contributing approximately \$250,000 per year which is a contribution made to the total budget of the I.T.U.

<u>Recognized Private Operating Agencies</u>	<u>Unit-Class</u>	<u>Amount (approx)</u>
Telephone Association of Canada	3	\$6000
Canadian Overseas Telecommunication Corporation	3	\$6000
Railway Association of Canada	1	\$2000
Telesat	$\frac{1}{2}$	\$1000
<u>Scientific or Industrial Organizations</u>	<u>Unit-Class</u>	<u>Amount (approx)</u>
Northern Electric Company Ltd	$\frac{1}{2}$	\$1000

Canadian participants in the C.C.I.T.T. also incur additional expenses in connection with the preparation of documents, studies and travel. The amounts involved vary depending on the activity of the participant. For example, in the case of The Telephone Association of Canada which is an active participant and a major contributor of documents, current annual expenditures over and above the direct contribution to the C.C.I.T.T. amount to about \$80,000 - \$90,000.

Expenditures are also incurred by Canadian participants in connection with such matters as hosting C.C.I.T.T. meetings in Canada. In June and July 1970, for example, a number of C.C.I.T.T. study groups met in Montreal. The cost involved was of the order of \$75,000 - \$100,000 and borne by the Canadian RPOA's.

C.C.I.T.T. LIST OF STUDY GROUPS AND PLAN COMMITTEES

Abbreviated Designation		Title	Interested Canadian Private Organizations
COM I	Study Group I	Telegraph operation and tariffs (including telex)	RAC; COTC
COM II	Study Group II	Telephone operation and tariffs	TAC; COTC
COM III	Study Group III	General tariff principles; lease of telecom-munications circuits	RAC; TAC; COTC; Telesat
COM IV	Study Group IV	Transmission maintenance of international lines, circuits and chains of circuits	COTC; TAC
COM V	Study Group V	Protection against dangers and disturbances of electromagnetic origin	TAC; N.E. Co; RAC
COM VI	Study Group VI	Protection and specifications of cable sheaths and posts	TAC; N.E. Co; RAC
COM VII	Study Group VII	Definitions and symbols	(will be combined CCIR symbols group)
COM VIII	Study Group VIII	Telegraph equipment and local connecting lines	COTC; RAC
COM IX	Study Group IX	Telegraph transmission quality; specification of equipment and rules for the maintenance of tele-graph channels	COTC; RAC
COM X	Study Group X	Telegraph switching	COTC; RAC
COM XI	Study Group XI	Telephone switching and signalling	COTC; TAC; N.E. Co.
COM XII	Study Group XII	Telephone transmission performance and local telephone networks	COTC; TAC; N.E. Co.
COM XIII	Study Group XIII	Automatic and semi-automatic telephone networks	COTC; TAC; N.E. Co.

Abbreviated Designation		Title	Interested Canadian Private Organizations
COM XIV	Study Group XIV	Facsimile telegraph transmission equipment	Telesat; COTC
COM XV	Study Group XV	Transmission systems	COTC; TAC; Telesat; N.E. Co.
COM XVI	Study Group XVI	Telephone circuits	COTC; TAC; Telesat; N.E. Co.
COM SP. A	Study Group Special A	Data transmission	Telesat; COTC; RAC TAC; N.E. Co.
COM SP. C	Study Group Special C	Noise (joint CCIR/CCITT Study Group administered by the CCITT)	COTC; Telesat; RAC; N.E. Co. TAC
COM SP. D	Study Group Special D	Pulse code modulation	Telesat; COTC; RAC; TAC; N.E. Co.
C.M.T.T.	Joint Study Group on Television Transmission	Television transmission (Joint CCITT/CCIR Study Group administered by the CCIR)	RAC; TAC; N.E. Co.
WORLD PLAN	World Plan Committee	World-wide telecommunication plan (Joint CCITT/CCIR Study Group, administered by the CCITT)	Telesat; COTC; TAC; N.E. Co.
PLAN AFRICA	Africa Plan Committee	Telecommunication Plan for Africa (Joint CCITT/CCIR Study Group, administered by the CCITT)	COTC
PLAN ASIA	Plan Committee for Asia, Oceania, Australia	Telecommunication Plan for Asia, Oceania, Australia (Joint CCITT/CCIR Study Group, administered by the CCITT)	COTC
PLAN LATIN AMERICA	Latin America Plan Committee	Telecommunication plan for Latin America (Joint CCITT/CCIR Study Group, administered by the CCITT)	COTC; TAC; N.E. Co.
PLAN EUROPE	Plan Committee for Europe and the Mediterranean Basin	Telecommunication plan for Europe and the Mediterranean Basin (Joint CCITT/CCIR Study Group, administered by the CCITT)	COTC

JOINT WORKING PARTIES

Abbreviated Designation	Title	Study Groups Concerned	Interested Canadian Private Organization
GM TAF	Tariffs (Africa)	I, II, III	
GM TAL	Tariffs (Latin America)	I, II, III	
GM TAS	Tariffs (Asia)	I, II, III	
GM TEUR	Tariffs (Europe)	I, II, III	
GM ALP	Use of alphabet no. 5	I, VIII, X, Sp.A	RAC; N.E. Co.
GM TGX	Worldwide telex and gentex routing plan	I, IX, X	COTC; RAC
GM LTG	Use of telephone-type lines for purposes other than telephony	IX, XIV, XV, Sp. A, Sp. C	TAC; N.E. Co; RAC
GM MAT	Automatic telegraph maintenance	IX, VIII, X	RAC
GM FT 6	Field trials of system no. 6	XI, XIII	COTC; TAC; N.E. Co.
GM PFP	Protection of power-feeding systems	V, XV	RAC; N.E. Co.
GM PAR	Protective devices	V, VI (+ CIGRE)	RAC; N.E. Co.
GM CDF	Protection against lighting	V, VI	RAC; N.E. Co.
GM TER	Earthing systems	IV, V, VI, XI, XV	RAC; N.E. Co.
GM NRD	New networks for data transmission	I, IX, X Sp. A	RAC; TAC; N.E. Co.

AUTONOMOUS SPECIALIZED WORKING PARTIES

FOR BACKGROUND STUDIES OF INTEREST TO THE DEVELOPING COUNTRIES

Abbreviated Designation	Title	Interested Canadian Private Organization
GAS 3	Economic and technical comparison of transmission systems	TAC; RAC; Telesat; N.E. Co.
GAS 4	Primary power sources	TAC; RAC; N.E. Co.
GAS 5	Economic conditions and tele- communications development	Telesat; COTC; TAC

INTERNATIONAL TELECOMMUNICATIONS SATELLITE CONSORTIUM

1.0 GENERAL

The International Telecommunications Satellite Consortium, (INTELSAT) was formed in 1964 when the representatives of eleven countries, (including Canada) entered into an Agreement establishing interim arrangements for a global commercial communication satellite system.

One of the features of this inter-governmental agreement is the establishment by a Special Agreement of the Interim Communications Satellite Committee, (ICSC) as the governing body of INTELSAT to exercise the function and utilize the powers set forth in Article I of the Agreement. The ICSC makes all policy and other important decisions and is assisted in its work by three Advisory Subcommittees on Finance, (ICSC/F), Technical Matters, (ICSC/T), and Contracting Procedures, (ICSC/C).

Article VIII of the Agreement also provides that the Communications Satellite Corporation, (COMSAT) shall act as Manager for INTELSAT subject to the general policies of the ICSC and in accordance with the specific determinations it makes from time to time.

2.0 MEMBERSHIP

Under Article XII of the Agreement, membership in INTELSAT is open to the government of any state which is a member of the International Telecommunication Union. The Agreement establishing the principles and organization structure of INTELSAT was signed for Canada by the Minister of External Affairs as one of the eleven original signatories at a formal ceremony in Washington on August 20, 1964. At the date of writing, the membership had grown to 76. A list of member countries is given in Attachment I.

The Special Agreement establishing the ICSC to cover the commercial, technical, financial and operating aspects of the global satellite system was signed at the same place and date by Canadian Overseas Telecommunication Corporation. Both Agreements entered into force that same day.

A supplementary agreement on arbitration for the settlement of legal disputes was signed by Canada in Washington June 4, 1965, and entered into force November 21, 1966. All three Agreements remain in effect until the entry into force of the Definitive Arrangements which are presently being discussed at government level.

3.0 PURPOSES

The principles which underline the formation of INTELSAT are given in the preamble to the inter-governmental Agreement and

include the establishment of a single global commercial satellite system as part of an improved global communication network providing expanded services to all areas of the world, and which will contribute to world peace and understanding.

- 3.1 The Interim Communications Satellite Committee, (ICSC) was formed to give effect to these provisions and assume policy control and direction for the design, development, establishment, maintenance and operation of the space segment of the global commercial communications satellite system. Present members of the ICSC are given in Attachment 2.
- 3.2 The Advisory Sub-committees advise and assist the Interim Committee at its request in the performance of its functions under the inter-governmental and Special Agreements.

The Sub-committees report periodically to the Committee in accordance with the rules of procedure, and as may be directed by the Chairman of the Committee.

- 3.2.1 The Advisory Sub-committee on Finance, (ICSC/F) performs the following number of continuing tasks:-

- a) Reviews periodically all direct and indirect costs incurred by the Manager, performs a continuing analysis of the form and contents of budgets, and prepares statements of the financial condition.
- b) Reviews depreciation and other accounting policies followed in INTELSAT accounts.
- c) To study and advise on the financial aspects of the global satellite systems.

Canada presently provides the Chairman for the ICSC/F.

- 3.2.2 The Advisory Sub-committee on Technical Matters, (ICSC/T) performs a large number of continuing essential tasks:-

- a) It studies and advises the Committee on the technical aspects of the satellite system with a view towards an improved global telecommunications network.

- b) It makes recommendations on the transmission characteristics and parameters on satellites and earth stations.
- c) It reports on the technical and operational matters under consideration by the consultative bodies of the I.T.U.
- d) It advises on matters of co-ordination with other satellite systems.

Both Canadian Overseas Telecommunication Corporation and the Department of Communications provide participating members on the technical Sub-committee.

3.2.3 The Advisory Sub-committee on Contracting Procedures, (ICSC/C) performs the following continuing tasks:-

- a) Reviews semi-annually contracting procedures and principles in the light of actual contracting experience.
- b) Reviews and makes quantitative assessment of the division of work performed by the Manager himself and that performed by outside contractors.
- c) Reviews the division of work performed internally in research and development and other contracts.
- d) Reviews INTELSAT patent policy.

On behalf of Canada, Canadian Overseas Telecommunication Corporation provides a representative on the ICSC/C.

3.3 The Communications Satellite Corporation, (COMSAT) was established in the United States following the passing of the Satellite Communications Act by Congress in 1962 and has an unusual status since it acts in two different capacities:-

- a) As Manager for INTELSAT;
- b) As the U.S.A. member on the ICSC.

3.4 The Canadian Overseas Telecommunication Corporation, established by an Act of Parliament in 1949, actually began active work in the field of satellite communications in

1961 by participation in a Commonwealth Satellite Communication Team to study the technical and economic feasibility of a Commonwealth Satellite System.

4.0 RIGHTS AND OBLIGATIONS

As a signatory to the Agreements, Canada obtains the right to invest in and utilize the global system. The level of investment is proportional to the anticipated usage of the system. It also allows the Canadian Overseas Telecommunication Corporation to enter directly into appropriate traffic arrangements and rate and tariff agreements with respect to the use of channels of communication provided by the system established under this agreement.

5.0 METHOD OF PARTICIPATION

In accordance with Article IV of the agreement, the Interim Communications Satellite Committee (ICSC) is composed of one representative from each of the signatories to the Special Agreement whose initial investment quota is not less than 1.5 per cent, and one representative from any two or more signatories to the Special Agreement whose combined quotas total not less than 1.5 per cent and which have agreed to be so represented.

The Canadian Overseas Telecommunication Corporation is the entity designated to participate for Canada through representation on the ICSC. The original Canadian Overseas Telecommunication Corporation investment quota amounted to a 3.75 per cent share and since the interest of each participant is reduced pro-rata to accommodate new parties to the agreement, this is now approximately 3.25 per cent, but is still the fifth largest among the participants and provides a significant indication of Canada's major role in world-wide communications. Pursuant to Article V of the Agreement, each signatory or group of Signatories to the Special Agreement represented on the Committee shall have a number of votes equal to its investment quota, or to their combined quotas as the case may be.

Most decisions taken by the Committee have been by consensus rather than by formal voting. When unanimity cannot be achieved, the Committee takes decisions on important matters, (those listed in Article V of the Agreement) by the concurrence of representatives whose total votes exceed the vote of the representative with the largest vote by not less than 12.5 per cent.

6.0 COST OF PARTICIPATION

The expenditures and commitments to date towards the cost of the design, development, constructions and establishment of the space segment amount to an estimated U.S. \$200,000,000 for all Signatories to the special agreement. The Canadian Overseas Telecommunication Corporation share amounts to U.S. \$7,500,000.

7.0 BENEFITS DERIVED

Canada benefits greatly from the communication facilities made available through the global satellite system, as much of our overseas traffic growth is now handled via satellite.

In representing Canada at the meetings of the ICSC, C.O.T.C., in consultation with the D.O.C. and other government departments, plays an active part in influencing and determining the important policy making decisions.

Membership in the Consortium gives Canada, as a technologically developed country, a strong voice in the international effort to create a more permanent international satellite system. It is implicit in the principles and acknowledged by the Signatories that the 1964 Agreements are of an interim nature. Article IX of the inter-governmental Agreement specifically states that the Committee shall render a report not later than January 1, 1969 containing recommendations concerning the Definitive Arrangements for an international global system which will supersede the interim arrangements. The changes and recommendations associated with these Agreements is now under active consideration at government level and negotiations are presently underway.

MEMBERS OF INTELSAT

Algeria	Luxembourg
Argentina	Malaysia
Australia	Mexico
Austria	Monaco
Belgium	Morocco
Brazil	Netherlands, The
Cameroon	New Zealand
Canada	Nicaragua
Ceylon	Nigeria
Chile	Norway
China	Pakistan
Columbia	Panama
Congo, Democratic Republic of	Peru
Denmark	Phillippines
Dominican Republic	Portugal
Ecuador	Saudi Arabia
Ethiopia	Senegal
France	Singapore
Germany	South Africa
Greece	Spain
Guatemala	Sudan
India	Sweden
Indonesia	Switzerland
Iran	Syria
Iraq	Tanzania
Ireland	Thailand
Israel	Trinidad & Tobago
Italy	Tunisia
Ivory Coast	Turkey
Jamaica	Uganda
Japan	United Arab Republic
Jordon	United Kingdom
Kenya	United States
Korea	Vatican City
Kuwait	Venezuela
Lebanon	Viet Nam
Libya	Yemen
Liechtenstein	Yugoslavia
	Zambia

MEMBERS OF THE ICSC

Arab Group (i)
Argentina
Asia/Pacific Group (2)
Australia
Belgium & Netherlands (3)
Brazil
Canada
Chile & Colombia & Venezuela
Denmark & Norway & Sweden
France (Monaco) (4)
Germany
Italy (Vatican City)
Japan
Mexico
Spain (Portugal)
Switzerland (Austria, Liechtenstein)
United Kingdom (Ireland)
United States

- (1) Arab Group: Algeria, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Republic, Yemen.
- (2) Asia/Pacific Group: Ceylon, India, Indonesia, Malaysia, New Zealand, Phillippines, Singapore, Thailand
- (3) "&" between countries indicates joint representation, usually on a rotational basis.
- (4) Countries and brackets are represented by the first country.

COMMONWEALTH TELECOMMUNICATIONS ORGANIZATIONCOUNCIL AND BUREAU

INTRODUCTION - PURPOSE

To promote the efficient exploitation and development of the Commonwealth external telecommunications system; to encourage and participate in consultation between Commonwealth countries in all aspects of the foregoing; to provide machinery for such consultation, for the administration of collaborative financial arrangements, and for the dissemination of advice and information.

BACKGROUND

The structure of the Organization, which includes periodic Conferences at Government level, a Council and a Bureau (Secretariat), is constituted according to recommendations made in the Report to Governments by the 1966 Commonwealth Telecommunications Conference. These recommendations were accepted by all Commonwealth Governments. The Bureau was required to have the legal capacity of a body corporate and is so covered by the Commonwealth Telecommunications Act 1968 Elizabeth II 1968 Chapter 24 (Britain).

Currently, Council comprises Representatives of 24 participating Commonwealth Governments, aided by a varying number of advisors, in some cases up to as many as four. Advisors can be designated to speak on behalf of, or in the absence of, the Representative.

Council has at present a sub-structure embracing a Permanent Committee of Representatives (Planning Committee) consisting of nine members including Canada, to deal with Network and Financial Arrangements.

This committee has a "Group of Deputies" which surveys and filters data collected and arranged for computer studies by a Working Party No. 1. A computer specialist liaison officer is under a yearly contract. These groups meet and function between Council meetings. Various ad-hoc Working Parties are established during Council meetings to deal with specific tasks.

Currently, the main items under study are Network Planning and Financial Arrangements; all have as an objective the unification of accounting, management and exploitation of the entire Commonwealth assets instead of the separate arrangements of the so-called First Wayleave Scheme (Telegraph service), and the Second Wayleave Scheme (Telephone etc. service) and taking into account services via satellite (which are presently excluded).

Conferences at Government level are normally held at 3-year intervals for the establishment or up-dating of policy and practices to be implemented through Council activity.

Council usually plans to meet once per year but oftener as required such as during the present formative stages.

The Bureau is located in London. Headed by a General Secretary, a staff of specialists in Operations, Finance and Administration operate year-round as the focal point for the consultative processes and the collection, evaluation and dissemination of information; all under the overall supervision of the current Chairman of Council (appointed annually) who may be resident in a country other than Britain.

Canadian participation is by way of a representative on Council. At present this is Mr. D.F. Bowie of COTC who is currently also Vice-Chairman of Council.

Initially, Canada's Representative on Council in 1967 was Mr. H.J. Williamson of D.O.T. with Mr. Bowie as Vice-Representative. For subsequent meetings Council was notified that Mr. Bowie would be Canada's representative until and when otherwise advised. Government participation in Council affairs is by way of an Advisor to the designated Representative.

Conferences at Government level, of course, anticipate representation at senior level. The first Conference since establishment of the new Organization is tentatively scheduled to be held in Ottawa in early 1971, prior to which Council plans to meet at least once, in September this year. Council's Working Party and Group of Deputies will hold various meetings on dates yet to be selected.

The collaborative discussions at Council meetings (and at Conferences) in respect of commercial, economic and financial considerations are largely influenced by a British majority investment of around 65%. Detailed network planning by the Group of Deputies under supervision of the Main Planning Committee takes account of technical aspects. While there is no direct discussion along political or social lines, the very nature and purpose of the Organization makes it necessary to keep in mind collaborative aspects which are of special concern to the developing countries. Canada is always regarded by the developing countries as a reliable and stable middle-power source of advice and example.

COMMENTS AND OBSERVATIONS

Canada's involvement

In 1879 it was considered that British territories west of the Pacific Ocean should be connected by submarine telegraph cable with Canada to enable them to have direct communication with Great

Britain without passing through foreign territories.

Canada took a leading part in the development of a suitable Pacific Cable project by virtue of negotiations and action by Sir Sanford Fleming, Chief Engineer of Canadian Pacific Railway and by Mr. F.N. Gisborne, first Superintendent of the Government Telegraph and Telephone Service which was established in 1879. Conferences in 1887 and 1894 discussed this matter and the Pacific Ocean Cable Project was authorized by Act of Parliament (UK) in 1901. It provided for the necessary capital and set up the constitution and finance of the Pacific Cable Board with headquarters in London and consisting of eight representatives namely, UK 3; Canada 2; Australia 2; and New Zealand 1. Subsequently in 1927 various direct radio-telegraph circuits were opened between certain Commonwealth countries including ones between Canada and the UK.

Several Commonwealth countries headed by Great Britain and including Canada, called an Imperial Wireless and Cable Conference in 1928 "to examine the situation which has arisen as a result of the competition of radio with cable services and report thereon and to make recommendations with a view to a common policy being adopted by the various Governments concerned." This Conference recommended and Governments endorsed the creation in 1929 of an Imperial Communications Advisory Committee (ICAC). Canada was among those represented on this Committee.

A Commonwealth Telegraph Conference, convened in 1942 to consider problems arising from changes in the general position and special problems brought on by the War and to make recommendations for their solution, recommended the establishment of a Commonwealth Communications Council to replace the Imperial Communications Advisory Committee of 1929. Canada was again a participant in this Council.

In 1945, a Commonwealth Telecommunications Conference called by Governments to deal with the expanding Commonwealth system of telecommunications, recommended that a central body, namely the Commonwealth Telecommunications Board (CTB), be established in place of the Commonwealth Communications Council. Accordingly, the CTB was incorporated in the United Kingdom on March 31, 1949 by the Commonwealth Telegraphs Act 1949. This Board was constituted with representatives of Partner Governments resident in London. (Canada nominated a member from D.O.T.)

Until April 1st, 1969, the business of the so-called First Wayleave Commonwealth Telecommunications essentially covering cable telegraph service, was handled through the C.T.B. in accordance with the Commonwealth Telegraphs Agreements of 1948 and 1963. Minuted records of proceedings, proposals and related documents flowed directly through this Government Department to and from its appointed resident Member of the Board thus enabling a good knowledge of all activity of the Board.

The National Body (COTC) did not have direct access to the Board or Board Member.

The Commonwealth Telecommunications Conference of 1966 recommended that the Board be replaced by a new Commonwealth Telecommunications Organization embracing a Council and a Bureau. It also recommended the replacement of the Commonwealth Telegraphs Agreements of 1948 and 1963 by a new Financial Agreement 1969 which has been signed by 23 Commonwealth Governments.

The Board was dissolved effective March 31, 1969 co-incident with the coming into force of the new Organization.

The present Council (and its Bureau) is the only machinery through which policies agreed at Commonwealth Government level can be implemented to ensure maximum day-to-day co-ordination and consultation in the exploitation of their respective investments.

Canada's investment in the Commonwealth Telecommunications System currently amounts to about \$55 million.

The new Organization (Council and Bureau) envisages only direct contact with the Government's representative on Council which in Canada's case, is the President and General Manager of C.O.T.C. with headquarters in Montreal.

Canadian influence and benefits

By early action in the Pacific Cable Project and continual participation in all bodies dealing with Commonwealth telecommunications, Canada has played a prominent role in this field for some 90 years.

The official record of this 90-year period of development clearly shows that Canada's dynamic optimism and courage greatly influenced the undertaking of many successful projects from the 1879 Pacific Telegraph Cable project to more recent ones such as the high-capacity submarine telephone cables across the Atlantic (TAT-1, CANTAT, ICECAN); in South East Asia (SEACOM) and currently to Bermuda, (CANBER). The establishment and opening of the Canadian East Coast satellite earth station has enhanced Canada's place as one of the leaders in the field of external telecommunications.

Benefits to Canada as a result of this activity is reflected, not only in substantial prestige in the world of telecommunications but also in healthy financial gains. The net profit shown by Canada's external carrier, C.O.T.C., is over 5.3 million dollars in the current year.

ADDITIONAL COMMONWEALTH COMMITTEE

To have an overall picture, it is necessary to include reference to the Commonwealth Cable Management Committee as a group still functioning outside the new Commonwealth Telecommunications Organization although endeavours are now being made to establish liaison that may lead to amalgamation.

Installation and operation of the Commonwealth high-capacity submarine telephone cables began with participation in the first one placed across the Atlantic in 1956 (TAT-1). Subsequently the Commonwealth System was expanded basically by CANTAT, COMPAC, SEACOM and CANBER. It was agreed by Partner Governments that these new facilities should be covered by financial arrangements separate from those relating to facilities embraced in the First Wayleave Scheme. Accordingly, a Second Wayleave Scheme was set up to suit Partners making investments in the new facilities. These Partners are Britain, Australia, Canada, New Zealand, Malaysia and Singapore.

As the Second Wayleave Scheme was not handled through the C.T.B. and is still outside the recently established Commonwealth Telecommunications Organization (Council and Bureau) a Commonwealth Cable Management Committee (CCMC) through which the business (financial, planning, construction, operation, etc.) could be handled was established in 1965 in accordance with recommendations made to and accepted by Governments. The new Committee (CCMC) enabled the amalgamation of two previous committees set up to respectively handle the construction and operation of the COMPAC cable (Pacific Cable Management Committee) and the SEACOM cable (Seacom Cable Management Committee). See attachment 1.

Canada's investment and interest in this Second Wayleave Scheme is exclusively represented on the Cable Committee (CCMC) by Mr. Bowie, President and General Manager of COTC. Government has no participation either directly or by Advisory or Observer status.

The Committee (CCMC) has a variety of Sub-Committees or Preparatory Groups that deal with detailed network planning, financial arrangements, etc. relative to these Second Wayleave assets.

NOTE: Recent discussions in the newly established Council have taken into account the need for Commonwealth Network Planning and Financial Arrangements (Unified Accounting) to be under a single Committee.

Accordingly, the terms of reference of Council's rejuvenated Planning Committee are such as to provide for liaison with the CCMC (Second Wayleave Scheme) both with respect to its Network Planning and its Financial Arrangements.

COMMONWEALTH CABLE MANAGEMENT COMMITTEE (EXISTING)

This Committee was formed as a result of recommendations made at a meeting in Honolulu in October 1963 by representatives of Governments participating in the Pacific and South East Asia Commonwealth cables, to the effect that the two separate and then existing Committees dealing respectively with the COMPAC and SEACOM projects should be amalgamated.

The Departments of Finance and of External Affairs agreed with the Department of Transport suggestion that the single committee concept be adopted.

Deputy Minister Baldwin (D.O.T.) advised External Affairs May 27, 1965 and Mr. Bowie (May 19, 1964) that the Corporation should continue to provide Canadian membership on the new single Committee and that Government "would provide an advisor to the COTC representative depending on the nature of policy to be discussed at a particular meeting."

Canadian Government officers have not, to date, been invited to attend any of the Committee meetings or meetings of its Working Parties on Planning or Financial arrangements or others.

The inaugural meeting of the new Committee was held in Sydney, Australia in November, 1965.

Backgrounds of these Committees are as follows:

Pacific Cable Project (Telephone) - COMPAC - 1959

This project was the second leg of the Commonwealth Round-the-World System first envisaged in a CTB study and later recommended to Governments by the 1958 Commonwealth Telecommunications Conference at which Canada took a leading part. (CANTAT between Canada and the UK was the first fully Commonwealth project.)

Based on the above Conference recommendation it was agreed, in principle, through Canada's leadership at a Commonwealth Trade and Economic Conference in Montreal in 1958, to construct a Round-the-World system linking up all segments of the Commonwealth.

The importance of telecommunications between countries of the Commonwealth had been given prominence at the meeting of Commonwealth Finance Ministers held in Mount Tremblant in Septmeber, 1957.

An initial meeting of Commonwealth telecommunications officers was convened in Sydney, Australia in October 1959 to discuss the Pacific Cable project and reach agreed Recommendations to participating Governments (UK, Canada, Australia and New Zealand).

The Canadian delegation consisted of:

Mr. D.F. Bowie	COTC, Head of Delegation*
Mr. R.G. Griffith	COTC
Mr. W.E. Connelly MBE	D.O.T.
Mr. D.S. Robertson	D.O.T.

* Designated as Head of delegation per letter to External Affairs September 2, 1959 from Deputy Minister Baldwin.

In the likely event that the project would be approved, the Conference recommended that for management of construction, operation, maintenance and exploitation of the COMPAC project it was essential to establish a Pacific Cable Management Committee - (PCMC) comprising a senior representative of each of the four participating Governments.

Deputy Minister Baldwin advised External Affairs (May 4, 1960) that Mr. Bowie would be the Canadian representative on this Committee but reserved "the right to subsequently name a second official who would act jointly with Mr. Bowie as the Canadian member." A copy of this advice was sent to Mr. Bowie.

Mr. Stoner (then External Affairs) advised Earnscliffe along these lines and noted that UK were going to have two persons act jointly as UK member on the Committee i.e. a Senior officer of Government and a Director of Cable & Wireless Ltd. (N.B.: This UK two-person representation is still carried on.)

Of the fourteen (14) main meetings held, a Departmental officer (Mr. F.G. Nixon) was able on one occasion, i.e. the Ninth meeting held in Honolulu in October, 1963, to attend and then only for certain sessions that discussed the possible amalgamation of the two management committees referred to in the opening paragraph above and the consequent future management and control of the Commonwealth Telephone Cable System.

Meeting Minute 215.1 reads:

"Welcome by the Convenor to additional representatives whose counsel and assistance would be of great value in this difficult problem. This was the first time that the P.C.M.C. has been so expanded. "

South East Asia Cable Project - SEACOM - 1961

As in the case of the COMPAC Project an initial meeting of Commonwealth telecommunications officers was convened in Kuala Lumpur in June 1961 to discuss and reach agreed Recommendations to participating Governments (UK, Canada, Australia, New Zealand and Malaysia) for the extension of the COMPAC cable to serve Southeast Asia namely Hong Kong, Malaysia and Singapore.

The Canadian delegation consisted of:

D.F. Bowie, COTC	Head of delegation*
W.E. Connelly, MBE, DOT	
I.L. Head, (Advisor)	Third Secretary Canadian Mission in Kuala Lumpur

* Designated as Head of delegation per Deputy Minister Baldwin's letter to External Affairs May 3, 1961.

Also as in the case of COMPAC, it was decided that for management of construction, operation, maintenance and exploitation of the South East Asia Cable Project (SEACOM), to establish a SEACOM Cable Management Committee (SCMC) comprising a senior representative of each of the Partners participating in financing the project.

In response to Mr. Bowie's request, (May 7/62) to be appointed Canadian representative on this Committee, Deputy Minister Baldwin advised External Affairs June 12/62 accordingly. Provision for Departmental participation was omitted although a first draft memorandum did envisage the same condition as in the case of representation on the COMPAC Management Committee.

No Government officer attended any of the eight SEACOM Management Committee meetings or meetings of its sub-committees.

DESCRIPTION OF WAYLEAVE SCHEMES

The basic concept of the Wayleave Scheme is that the respective National Bodies are "common-users" of the Commonwealth external cable and wireless system in that they make such use as they desire of the system without accounting in respect of individual messages. Instead of National Bodies making payments which would normally be due on balance as between one operating body and another for transmission of each other's traffic, the expenses incurred by each National Body in operating and maintaining its part of the common-user system, and the net revenue derived by each National Body from its own public and foreign sources, are calculated annually in an agreed manner. The total expenses are then allocated among National Bodies in the proportions which the net revenue of each bears to the total net revenue of all. The resultant debits are set against the expenses of the common-user system initially incurred by each National Body, the differences constituting net wayleave payments or receipts as the case may be.

FIRST WAYLEAVE SCHEME

Following an exhaustive review of the then existing accounting arrangements, Partner Governments adopted the principle of Wayleave Accounting (see above) as from April 1st, 1950.

The financial clearing arrangements provided by this Wayleave Scheme operated successfully from the date of its introduction until the accounting year of 1956-57 which was the first year during which the first Trans-Atlantic cable (TAT-1) was in operation.

SECOND WAYLEAVE SCHEME

Partner Governments, however, after considerable deliberation, could not agree to the inclusion of TAT-1 into the First Wayleave Scheme. It was felt that the correlation of each country's share of the annual charges with its total revenue would throw an undue burden for the costs of the new telephone cable system on those countries which derived large telegraph net revenues from the existing system, particularly the United Kingdom; and that it would require additional payments by such countries as India, which for some time might not be connected to the new system.

Accordingly, and having in mind Commonwealth plans to proceed with a "round-the-World" telephone cable system, the Commonwealth Telecommunications Conference of 1958 recommended the establishment of a separate Second Wayleave Account for large capacity cables (and for auxiliary radio services associated therewith), forming part of the "Round-the-World" system; this new Wayleave Account to be based on the same principles as the First Wayleave Scheme. The United Kingdom and Canada, in respect of their interests in TAT-1 were the first parties to the new Wayleave Account.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

(I.C.A.O.)

1. GENERAL

In November 1944, fifty-two nations sent representatives to Chicago to consider the international requirements of Civil Aviation. The outcome of this conference was agreement at the Convention on International Civil Aviation calling for establishment of the International Civil Aviation Organization as a specialized agency of the United Nations.

Because the Convention on International Civil Aviation required ratification by twenty-six states before I.C.A.O. could come into being, the conference provided for a provisional organization (PICAO) with advisory powers only and this organization operated for twenty months until on April 4, 1946, I.C.A.O. officially came into existence.

2. MEMBERSHIP

Canada had become a member on the 13th February 1946 and has participated in the organization since its inception and has had representatives on the Council of I.C.A.O. continuously since then.

3. WORKING ARRANGEMENTS

The structure of I.C.A.O. consists of the following bodies:

- a) The Assembly is the sovereign body consisting of approximately 120 contracting states each having one vote. The Assembly normally meets every three years to review in detail the work of the organization and to give guidance to the other bodies of I.C.A.O. for their future work.
- b) The Council is a permanent body responsible to the Assembly and is composed of twenty-seven contracting states elected by the Assembly for a three-year term. The Council with its subsidiary bodies, the Air Navigation Commission, the Air Transport Committee, the Committee on Joint Support of Air Navigation Services, the Legal Committee and the Finance Committee, provides the continuing direction of the work of the Organization. One of the major duties of the Council is to adopt international Standards and recommended practices and to incorporate these as Annexes to the Convention on International Civil Aviation. The Council may also act as an arbiter between contracting states on matters concerning aviation and implementation of the convention.

- c) The I.C.A.O. Secretariat under the Secretary-General is a group of international civil servants which supplies the technical and administrative aid to the governmental representatives who make up the I.C.A.O. Council and Committees. This secretariat is made up of bureaus corresponding to the committees which form the subsidiary bodies of the I.C.A.O. Council as mentioned under b) above.

4. BACKGROUND

International standardization is essential in all services required to support air operations, such as telecommunications, navigational aids, air traffic control, search and rescue, etc. To this end I.C.A.O. establishes international standards, recommended practices and procedures for the safety, regularity and efficiency of air navigation.

Although the Council has the responsibility for final adoption of these standards, recommended practices and procedures, the body chiefly concerned with their development is the Air Navigation Commission. This Commission is composed of twelve persons appointed by Council after nomination by contracting states and it reports to the Council. The Commission is responsible for the planning, co-ordination and examination of all I.C.A.O.'s work in the navigation field. They are assisted in this work by the technical secretariat of the Air Navigation Bureau. Each contracting state may participate in the development work of the Air Navigation Commission by attending the various divisional type meetings held by I.C.A.O.; for example, communication divisional meetings are held approximately every five years, or more often if necessary, to review or draft new communication standards, recommended practices and procedures.

Not all aviation problems can be dealt with on a world-wide scale and many subjects are considered on a regional basis. I.C.A.O. has therefore set up eight geographical regions and Regional Air Navigation meetings are held to facilitate detailed planning of needed facilities including both fixed and mobile communication networks.

In providing for regional communication networks and world-wide communication standards close co-operation is required between I.C.A.O. and the I.T.U. A recent example of the co-operation between these two international organizations was the I.T.U. Extraordinary Administrative Radio Conference for the preparation of a revised frequency allotment plan for the Aeronautical Mobile Service held in Geneva in 1966. In preparation for this conference preparatory meetings were held by both I.C.A.O. and the I.T.U. During the final conference the Canadian delegation prepared the basic frequency allotment plan which, with only a few minor changes, were adopted for implementation.

I.C.A.O. also undertakes the co-ordination of joint support programmes to provide facilities in areas of the world where otherwise such facilities would not exist. An example of such co-operation is the system of Ocean Station vessels which span the ocean areas of the world. They fill gaps in the complex weather reporting networks, provide radio navigation aids to aircraft and serve as floating search and rescue bases for both ships and aircraft. Canada is one of several countries which have accepted the responsibility of providing ships to man these stations while other countries contribute to the financial costs involved.

A system of Joint Support also exists for the provision of facilities and services required to serve the North Atlantic air routes. There are two such international agreements for providing meteorological and telecommunication facilities in Greenland and the Faroe Islands and in Iceland. The cost to Canada for these services is based on the number of Atlantic crossings by Canadian registered aircraft per annum as a percentage of the total number of crossings. For 1970 the assessment for Canada amounts to \$235,000 for Greenland and the Faroes and \$81,000 for Iceland which represents 7.09% of the total.

Canada provides a grant towards the headquarters building of the organization in Montreal and is also assessed a percentage of the overall budget of the organization. For 1970 the total budget is approximately \$8,000,000 of which Canada is assessed at 3.69% i.e. \$274,000.

In addition to its activities in standardization and in regional planning to meet current operational requirements, I.C.A.O. also provides the machinery for long range planning to meet future demands of air transport and to co-ordinate and exploit the development of new techniques for civil aviation. This is done by the establishment of special committees or panels to study specific subjects and to make relevant recommendations. An example of such a study being made in the field of telecommunications is the I.C.A.O. ASTRA (Applications of Space Techniques Relating to Aviation) Panel. This Panel was established by the Air Navigation Commission on March 26, 1968, following several preliminary discussions between representatives of Canada, France, United Kingdom and the United States. The first meeting of the Panel was held in Montreal in November 1968. Representation is provided by both MOT and DOC.

INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION

I.M.C.O.

1.0 GENERAL

The Convention which established I.M.C.O. was drafted by the United Nations Maritime Conference held in Geneva in 1948. Canada signed on 15 October, 1948. This Convention, however, required acceptance by twenty-one States, including seven with at least one million gross tons of shipping each. This requirement was met on March 17, 1958 and the first I.M.C.O. Assembly was held in London in January, 1959.

2.0 MEMBERSHIP

The Organization is governed by an Assembly consisting of representatives of all I.M.C.O. Member States which establishes the work program, the budget to which all Member States contribute on an agreed scale of assessment, approves financial regulations, elects the Council and approves appointment of the Secretary-General.

The Council consists of representatives of 18 Member States as elected by the Assembly and is the executive body on I.M.C.O. affairs between Assembly sessions. Canada has retained membership on Council since its original formation.

The Maritime Safety Committee consists of representatives of sixteen Member States elected by the Assembly for a term of four years (Canada is a member). This Committee deals with technical problems such as aids to navigation, construction and equipment of ships, dangerous cargoes, search and rescue, maritime safety procedures and any other matters connected with maritime safety. One of its sub-committees deals with radiocommunications.

3.0 WORKING ARRANGEMENTS

In continuing support of the organization, the Secretariat of I.M.C.O. has its headquarters in London, England; it is composed of the Secretary-General, the Deputy Secretary-General, the Secretary of the Maritime Safety Committee, and a number of international civil servants who carry out the every day work of the organization.

The broad objective of I.M.C.O. is to provide the means by which the governments of Member States may collaborate to the best effect on a continuing basis in formulating those standards for the governance and improvement of shipping which require international action for their effective implementation, having regard for the pace of technological change, and which concern:

1. the safety of ships and vessels and other equipment operating in the marine environment, including their crews, passengers and others from time to time on board.
2. the effects of the behavior of ships and vessels and other equipment operating in the marine environment upon other interests.
3. the relations within the shipping industry and of shipping generally with other activities.
4. consideration of public and private international maritime law issues associated with any matter falling within the competence of I.M.C.O.
5. the encouragement of proficiency within the shipping industry throughout the world, by the execution of programmes of technical assistance.

UNESCO

The United Nations Educational, Scientific and Cultural Organization was established in 1946, and Canada became a member that same year. In the telecommunications field, UNESCO aims are to maintain, develop and propagate knowledge by means of mass communications, by ensuring the expansion of newspaper, radio and film services; to study restrictions to freedom of information and to make recommendations for the removal of these restrictions. UNESCO has presently 126 members.

Formal Canadian rights and commitments regarding the UNESCO communications program are the same as in every other field of activity of the Organization, i.e., Canada has to pay a percentage of the total budget and to join in the formation of the Organization policy through our delegations at the General Conferences and our permanent Delegation to UNESCO. Furthermore, since 1968 when a Canadian was elected on the Executive Council, and until 1974, Canada will join in all discussions of the Council which supervises the implementation of the program and makes recommendations thereon to the General Conference and to the Director General. The Canadian Council member will also be able to recommend to the Director General appointments to Secretariat positions in the information field as well as other fields. Canada can also put forward Canadian nominations in information positions (including telecommunications), at the Paris headquarters and to off-headquarter UNESCO projects in this field.

Canada's contribution to UNESCO is determined in conjunction with its contribution to the UN budget, i.e. according to the member State ability to pay. Canada's share in the budget is 2.84 per cent or \$2,032,000, every two years.

Canada has enjoyed a high reputation in UNESCO in the telecommunications field, due to our participation in specialized meetings and because of the Canadians employed as experts at headquarters and off-headquarters. Canada is thus very often invited to join expert meetings on telecommunications, and Canadians are frequently called upon to serve as session presidents (recently, Mr. Eric Kierans in Paris, and earlier Mr. Alphonse Ouimet in Paris and Montreal) and Canada is often chosen as host country (Montreal meetings in 1967 and 1968). Our present participation ensures Canada an important and continuous contact with experts from all over the world and favours a cooperation which can extend outside UNESCO.

For a number of years now, UNESCO has shown great interest in satellite broadcasting, as a means of improving information and cultural exchange and promoting education, mainly in developing countries.

THE UN COMMITTEE ON THE PEACEFUL USES
OF OUTER SPACE

In a General Assembly resolution dated December 13, 1958, the United Nations instituted an ad hoc Committee on the peaceful uses of outer space (resolution 1348(XIII)). The Committee was to submit its first report at the next meeting of the Assembly. The need for international cooperation was emphasized in this new field but it was felt that the two super powers were more concerned with military uses.

A standing Committee was instituted the next year by resolution 1472(XIV) of the General Assembly dated December 12, 1959. The Committee established two sub-committees, one for legal matters and the other for the technical and scientific aspects of the problems due to the development of this new science. The sub-committees held their first session in May-June 1962. The legal sub-committee has since concentrated on the drafting of the basic principles of peaceful use of outer space (1967 Treaty), on the registration of objects launched into space and on the drafting of a Convention relating to the damages due to these objects. This sub-Committee was only marginally concerned with telecommunications matters to date, since these were chiefly studied by the scientific and technical sub-committee.

Since the first session of this sub-committee, Russians and Americans were exchanging ideas about a possible cooperation aiming at the establishment of a World Meteorological Satellite System and were studying the expansion of satellite telecommunications as a means of improving communication services.

Despite the activities of these two sub-committees, many problems remain, the solution of which is still far from reached because of the diverging views of the Committee members.

Following a General Assembly recommendation, the Committee on the Peaceful Uses of Outer Space began to study in 1967, "the technical feasibility of direct broadcast satellite communications". First, the matter was briefly discussed at a Legal sub-committee meeting, then sent over to the Scientific and Technical sub-committee for examination of the practical aspects.

Sweden which had shown great interest in the project, had in mind the preparation of a working document that the Committee could use in order to study direct broadcast satellites. After consultation between the Canadian and Swedish Governments, it was decided that they would both cooperate in the drafting of this working document.

When the question was given a closer look, it was felt that despite the existence of the two sub-committees of the Committee on

the Peaceful Uses of Outer Space, none would accept the responsibility for such a complex study. Sweden hoped that a working group would be instituted to study direct-broadcast satellite communications. Such a Group came into existence on December 20, 1968, by resolution 2453(XXIII).

Since that time, Canada and Sweden jointly prepared three working documents discussing various alternatives of international arrangements including political, technical, economical, organizational, cultural and legal aspects as well as information and aid problems. In support of these proposals, Canada calls for international co-operation as a basic and essential element in any rational and equitable use of this new technique the development of which is forecast for the near future.

Meetings were held in January and May, 1969 and in March, 1970, to discuss these documents and others submitted by other countries. Representatives of the Departments of Communications and External Affairs attended the meetings, as well as some CBC experts, as observers and advisors. The reports of the three meetings are under study and future action is now being developed.

In view of the responsibilities and expertise of Telesat Canada in the space field, it would be desirable to consult this organization on all matters discussed by the Committee.

LEVELS OF CBC/INTERNATIONAL BROADCASTING CONTACTS

CBC contacts with international broadcasters have been building for 25 to 30 years and CBC people now have personal contacts at many organizational levels with professional broadcasters in all of the major and most of the minor broadcasting organizations in the world.

The External Services Division, comprising the International Service, Overseas and Foreign Relations, Export Sales, and the CBC's foreign offices, works full-time in the area of international contacts, dealing with the administration, production and distribution people of broadcasting organizations throughout the world.

The CBC is a founding member of the Communauté des télévisions francophones, the Communauté radiophonique des programmes de langue française and of the Commonwealth Broadcasting Conference, and it is an associate member of the European Broadcasting Union and the Asian Broadcasting Union.

Within the Communautés, there are daily contacts at the working level, either through the CBC's Paris office, or from the French Television and Radio networks. At the general and program meetings of the Communautés, (some of which are held in Canada each year) there are contacts with Director-Generals of the participating organizations, with their programming heads, and/or with some of the production staffs.

The Commonwealth Broadcasting Conference held every two years, brings together the heads of Public Broadcasting of the Commonwealth (Presidents, Director-Generals or Directors of Broadcasting) as well as the heads of Engineering, and the heads of programming, etc. The host broadcasting organization arranges for contacts to be made with all levels of the personnel in the organization. CBC last hosted the Conference in 1963.

The European Broadcasting Union has several levels of meetings: General Assembly (usually attended by heads of broadcasting organizations); Committee meetings: Program, Technical, and Legal; and sub-Committee meetings: educational variety, music, sports, etc. etc. CBC is represented at these meetings either by the relevant network or Head Office personnel or by the CBC representatives in Paris or London.

Although the Asian Broadcasting Union does not have the same numbers of meetings as the EBU, there is a yearly meeting where heads of broadcasting, (Director-Generals, etc.) and their Engineering and Programming experts hold committee sessions and a general assembly. CBC attends regularly to strengthen its close ties with Japan Broadcasting, ABC (Australia), and NZBC, etc.

This year the Director-General, External Broadcasting, will attend the meetings in Australia and New Zealand. At the meetings in Singapore in 1967, heads of the United Nations Agencies (FAO, UNICEF, UNESCO, etc.) held joint meetings with the ABU.

CBC is an active member of an informal consortium of broadcasters meeting to discuss and solve questions of administration, copyright, costs and operations involved in the broadcast use of international satellites.

The Engineering Department of the CBC is involved in international liaison and cooperation on technical matters affecting broadcasting, such as frequency allocation, colour standards, etc. and, on behalf of Canada, is an active participant in CCIR, the International Radio Consultative Committee of I.T.U. (A CBC Engineer is Chairman of the Committee on Direct Broadcasting from Satellites).

Visits from foreign broadcasters are arranged by the CBC, foreign crews are assisted, and foreign broadcasting trainees are placed in on-the-job training within the Corporation. Contacts with CBC personnel relate to the interests of the visiting person or group. Personal contacts with foreign broadcasters at all levels was highest during 1967, when broadcasters (Directors-General, crews, program heads, etc.), from 50 countries were assisted in their arrangements by the CBC.

At the request of the Canadian International Development Agency, or UNESCO, CBC has sent personnel to aid foreign broadcasting organizations in a variety of different broadcast areas. For example, CBC gave major assistance in the setting up of television in Malaysia and Ghana, and has provided assistance in the past year in Nigeria and Sierra Leone, etc., resulting in close relationships being built with these organizations.

With co-production agreements, distribution agreements, and contracts as a part of the CBC's operations internationally, closer relations are established with each broadcasting organization concerned e.g. agreement with Soviet Broadcasting, arrangements with BBC, ties with the American networks, Olympics arrangements with Mexico, Japan, Germany, etc. broadcasting organizations.

Apart from the official level of CBC international contacts, CBC programmers, producers and technical personnel have been meeting their international colleagues over the years at international program sales markets, at screenings, seminars, assemblies and festivals, and crews filming abroad are encouraged to continue CBC contacts with international colleagues.

THE INTERNATIONAL UNION OF RADIO SCIENCE

(URSI)

The International Union of Radio Science, (l'Union Radio-Scientifique Internationale, abbreviated URSI), until 1968 the International Scientific Radio Union, had its origin in the "Commission Internationale de Télégraphie Sans Fil Scientifique" (TSFS), which was founded in 1913 with the intention of encouraging international research on the propagation of radio waves and related problems. When the International Research Council, now the International Council of Scientific Unions (ICSU), was formed in 1919, URSI was one of the four founder members under the name, "Union Internationale de Radiotélégraphie Scientifique". URSI is now one of the 16 member unions of ICSU and its main aims are: (i) to promote scientific studies relating to radiocommunications; (ii) to aid and organize radio research requiring international cooperation and to encourage the discussion and publication of the results; (iii) to facilitate agreement on common methods of measurement and the standardization of measuring instruments.

The administration of the Union and the organization of the work are entrusted to an elected Board of Officers which acts in accordance with the broad directives of the Executive Committee. This Committee is composed of members appointed by the National Committees of the 37 member countries which adhere to the Union. The actual scientific and technical work is done mainly under the auspices of the National Committees. So as to assist in the coordination of this work on an international scale, URSI has established eight Commissions, each of which is charged with the study of a specific subject. Several Commissions are concerned with different aspects of solar-terrestrial physics, and these interests are centralized in the URSI-STP Committee. The activities of the Union as a whole are coordinated in the permanent Secretariat which has offices in Brussels, Belgium.

Canada, in view of its internationally well established reputation in the field of ionospheric research holds the chairmanship of committee III(ionosphere): Prof. C.O. Hines of University of Toronto.

Every three years the Union holds a General Assembly of the official and ordinary delegates nominated by the member countries. The aim of the Assembly is to review recent progress in radio science and to plan the work for the ensuing triennium, including proposals for the organization of international symposia on topics of current interest to one or more of the Commissions.

The recent XVIth General Assembly meeting was held in Canada in 1969 and attended by approximately 550 delegates which together with other invited guests led to a total of 850 participants.

Perhaps more than in any other field of scientific work, radio research has special requirements for large-scale international programmes. Many of the phenomena that must be studied are world-wide in extent and, yet, they are subject to a certain degree of control by the experimenters. The new activity in the exploration of space, with the necessary extension of our scientific observations to the space environment, depends on radio for its communication link and, at the same time, expands the scope of radio research. Radio astronomical studies are concerned with the whole universe and, in fact, have extended its known boundaries.

As a result of the URSI announcement about the Alouette and ISIS programmes last year, nine additional countries approached Canada to investigate the possibility of using the Alouette satellites. This was in addition to the 8 foreign countries already using Alouette.

URSI has a distinct field of usefulness in furnishing a common meeting ground for the numerous workers in the manifold aspects of radio research; its meetings and the activities of the Commissions facilitate the exchange of ideas and furnish a valuable means for promoting research.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

(IEEE)

The Institute of Electrical and Electronics Engineers, Incorporated, commonly referred to as the IEEE is the world's largest technical association and is divided into 10 regions, as follows:

Regions 1 to 6	-	United States
Region 7	-	Canada
Region 8	-	Europe
Region 9	-	South America
Region 10	-	Australia, New Zealand and the Far East

Indirectly, Canada as a whole and directly Canadian companies and Canadian engineers derive many advantages from participating in the organization.

Attendance by members from many nations at international meetings enables Canadian engineers to keep abreast of the latest developments in the state of the art.

A number of IEEE sections in Canada hold periodic symposiums and exhibitions. These are attended by engineers from many foreign countries. Canadians are able to establish and maintain Canada as a leader by presenting technical papers and exhibiting Canadian electronics products.

The IEEE periodical technical publications provide Canadians with a source of up to date information in the electronics field.

The IEEE is subdivided into a number of technical committees. These committees have been influential in establishing world accepted standards. Canadian membership enables Canadian engineers to influence these standards taking into account the Canadian environment. It also provides useful information to the various standards associations in Canada.

The meetings of the local IEEE sections provide a means for engineers in the Government, industry and in the academic world of arranging for the presentation of talks on subjects of mutual interest and permits joint discussions of common problems.

THE AMERICAN INSTITUTE FOR AERONAUTICS AND ASTRONAUTICS

(AIAA)

The AIAA is a fairly large and highly technical space oriented organization. The Institute has been in existence for 38 years and counts 32,740 members of which 241 are Canadian. Although the name does not imply involvement in telecommunications, they play nevertheless an important role. Their conferences on satellite communications, held every 2 years, set milestones in the development of communications technology.

These conferences are usually attended by the leading experts in the field. At the recent Los Angeles Conference 10 nations had sent observers. One session was entirely devoted to the Canadian domestic Satellite Communications System with such speakers as Dr. J.H. Chapman and engineers from CRC, Telesat, the CBC and Northern Electric Co. There were also panel discussions on satellite broadcasting systems for new and developing nations, spectrum utilization in the U.S.A. and Canada, satellite technology aspects, etc.

Apart from the formal sessions, the informal exchange of ideas and advance information of development trends in other countries is invaluable. Canadian industry is usually well represented.

THE INTERNATIONAL COMMITTEE ON SPACE RESEARCH (COSPAR)

The International Committee on Space Research (COSPAR) was formed in 1958 at the end of the International Geophysical Year to continue the international cooperation in all sciences that are engaged in fundamental research problems involving rockets and satellites. (The Committee will however normally not concern itself with technological problems such as propulsion, construction of rockets, guidance and control). The objectives will be achieved through national committees of scientists working through the International Council of the Scientific Union (Headquarters, Rome, Italy).

In Canada the space activities cover a broad range of scientific disciplines in the fields of basic and applied research and in the applications of space technology. Within the Federal Government, these activities are coordinated by an Interdepartmental Committee on Space, established in 1969. Scientific activities are coordinated by the Canadian National Committee on Space Research, an associate committee of the National Research Council of Canada, chaired by Dr. I.B. McDiarmid of NRC, and with university, industrial and government scientists as members. This committee forms a scientific consultative group on

scientific problems related to space and, through its Scientific Evaluation Panel, screens, coordinates and programs rocket experiments as part of the overall upper atmosphere research program. The membership of the Canadian Committee on Space Research involves all leading scientists in government organizations, crown corporations, universities and industry.

Canada's recent report to COSPAR April 1970, prepared by the Space Research Facilities Branch of NRC goes in extensive detail on our Scientific Satellite Programme, our High Altitude Sounding Rocket Programme, our participation in the experiments with the TOS series satellites, the Nimbus III spacecraft, and the Advanced Technology Satellites ATS 1 and 3. In addition Canada has reported on its ground based studies in the following areas: Noctilucent Cloud studies, Airglow studies, meteoritic research, auroral research, radio astronomy, geomagnetic measurements and the solar patrol telescope project.

As can be seen the field of activities is quite extensive, and involves the participation of many organizations. In the federal government it includes the National Research Council, the Departments of Communications, Energy Mines and Resources, Transport, the Defence Research Board, the Dominion Observatory. In industry participation is by many Canadian Companies such as Bristol Aerospace, RCA Limited, Northern Electric Company, Spar Aerospace, Computing Devices.

In addition to this list universities in most provinces participate.

Canada's participation in Cospar is of the greatest assistance to our research scientists. It establishes us as one of the major active contributors, it creates contacts with other scientists in the same field throughout the world, it gives us access to research in other countries and most important it enables us to do experiments in conjunction with other nations on a much larger scale than ever before.

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PRELIMINARY ANALYSISTREATIES DEALING WITH TELECOMMUNICATIONSLegend applicable to attached treaty analyses

1. Title of Treaty.
Canada Treaty series number. (C.T.S.)
2. Date of Signature
Person signing.
Expiry date.
Still in force.
3. Purpose of Treaty.
4. Rights and obligations of Signatory.
5. Method of participation/operation.
6. Cost of participation. Financial commitments.
7. Benefits to Canada.
8. Particular problems?
9. Should arrangement be maintained?
10. Recommended changes?

1. RADIO COMMUNICATIONS, BETWEEN PRIVATE EXPERIMENTAL STATIONS
C.T.S. Series No. 2, 1929.
2. Exchange of Notes October 2 and December 29, 1928, January 12,
1929,
Signed by Vincent Massey, Canadian Minister at Washington.
Effective January 1, 1929.
No expiry date specified; however, See Treaty Series No. 5, 1934.
which continues this treaty.
3. As title indicates.
4. Allowed Canadian Amateur stations to exchange communications
with Amateur Station in the United States.
5. Mutual co-operation.
6. Costs were nil.
7. Canadian Amateurs benefited by the right to communicate with
United States Amateurs.
8. Problems were nil.
9. The arrangement is no longer necessary as existing ITU Radio Regs
permit this type of communication.
10. See Treaty Series No. 5, 1934.

1. RADIO COMMUNICATIONS BETWEEN PRIVATE EXPERIMENTAL STATIONS -
(CANADA AND SOUTH AFRICA).
C.T.S. No. 3, 1929.
2. Signed: 19-12-28 by O.D. Skelton, Secretary of State for External Affairs.
Treaty is no longer in effect nor is it required.
3. As title indicates.
4. Allowed Canadian Amateur Stations to exchange communications with Amateur Stations in South Africa.
5. Mutual co-operation.
6. Costs were nil.
7. Canadian Amateurs benefited by the right to communicate with South African Amateurs.
8. Problems were nil.
9. The arrangement is no longer necessary as existing ITU Radio Regs permit this type of communication.
10. See C.T.S. No. 5, 1934.

1. RADIO COMMUNICATIONS BETWEEN PRIVATE EXPERIMENTAL STATIONS -
(CANADA AND IRISH FREE STATE)
C.T.S No. 4, 1929.
2. Signed by: O.D. Skelton, Secretary of State for External Affairs,
1-1-29.
Treaty is no longer in effect, nor is it required.
3. As title indicates.
4. Allowed Canadian Amateur Stations to exchange communications with
amateur stations in the Irish Free State.
5. Mutual co-operation.
6. Costs were nil.
7. Canadian Amateurs benefited by the right to communicate with Irish
Free State Amateurs.
8. Problems were nil.
9. The arrangement is no longer necessary as existing ITU Radio Regs
permit this type of communication.
10. See C.T.S. No. 5, 1934.

1. AGREEMENT BETWEEN CANADA, THE UNITED STATES, CUBA AND NEWFOUNDLAND
RELATIVE TO THE ASSIGNMENT OF HIGH FREQUENCIES TO RADIO STATIONS
ON THE NORTH AMERICAN CONTINENT.
C.T.S. No. 6, 1929.
2. Exchange of Notes, February 26 and 28, 1929 - Signed by: O.D. Skelton,
Secretary of State for External Affairs. Agreement to remain in
force until January 1, 1932 and thereafter for an indeterminate
period and until one year from the day on which a denunciation
thereof shall have been made by any one of the contracting parties.
United States FCC still list this agreement as being in force;
however, it is indicated that Cuba ceased to be a party to it
effective Oct. 5, 1933 by virtue of notice to the Canadian
Government.
(This could be interpreted to mean the agreement is no longer
valid for the remaining parties also).
3. As the title indicates.
4. To expect and to give cooperation in the use of Radio high frequencies.
5. -----
6. Nil.
7. Nil. The agreement is too old and out of date.
8. Nil. It is doubtful if it gives any consideration.
9. No.
10. Arrangement should be made with the United States to denounce the
agreement.

1. AGREEMENT BETWEEN CANADA AND THE UNITED STATES RELATING TO AIR NAVIGATION

C.T.S. No. 8, 1938.

2. Exchange of Notes, July 28, 1938.

Signed by: H.M. Marler, Canadian Minister at Washington.

Comment: This would appear to be a DOT responsibility. The only reference to Radio is in Article XI which is still valid.

1. INTER-AMERICAN RADIOCOMMUNICATIONS CONVENTION
C.T.S. No. 18, 1938
2. Signed at Havana, December 13, 1937 by Laurent Beaudry and
C.P. Edwards.
Expiry date not specified.
Part II of the Convention (inter-American Radio Office) terminated
for all parties Dec. 20, 1958 (Canada Treaty Series No. 32, 1958)
Remainder of Convention still in force.
Canada ratified Convention, December 22, 1938.
3. To resolve by common understanding such problems as may arise in
the field of radiocommunications in the American continent.
4. The right to receive and obligation to give cooperation and to coordinate
frequency assignments and to alleviate interference.
5. By meeting periodically in conference and by coordinating on regular
basis the frequency assignments in all participating countries.
6. Canada's share in defraying cost of operation of the coordination
office is \$6000.00 annually. However, this amount has not been
billed or paid since 1963.
7. Canada participates in the exchange of information regarding frequency
assignments. Main benefit is the resulting coordination between Canada
and the United States. This at the moment, is being accomplished as
the result of a bi-lateral arrangement with the U.S.A. as operation
of the office in Cuba is not satisfactory. The matter is in the hands
of External Affairs but little progress is being made to improve matters.
8. Details of the difficulties are available in Classified file on the OIR.
- 9 and 10. The problem is being dealt with by External Affairs.

1. THE USE OF RADIO FOR CIVIL AERONAUTICAL SERVICES BETWEEN
CANADA AND THE UNITED STATES OF AMERICA

C.T.S. No. 5, 1939

In force, February 20, 1939.

Signed by H.M. Marler, Canadian Minister at Washington.

Expiry date 60 days after notification by one of the two parties involved. There is no indication that it has been cancelled by either Canada or the United States. However, it is so out of date that it can hardly be considered as being valid. Also most of its provisions have been superseded by other agreements.

Its difficult to be specific; however, the commitments made under the ICAO have certainly invalidated most of the agreement.

9. The arrangement should not be maintained.

10. Action should be taken to officially cancel the agreement.

This Arrangement is listed by the United States F.C.C. as still being in force.

1939 Citation 53 Stat. 2157

EAS 143

1. INTER-AMERICAN AGREEMENT ON RADIO COMMUNICATIONS
C.T.S. No. 5, 1943.
2. Signed at Santiago-de-Chile, January 26, 1940
Countries must give one year notice before withdrawing
Still in force.
Notification of Adherence by Canada, May 8, 1943.
3. The purpose of the treaty is to provide for mutual cooperation in the allocation, coordination and use of radio frequencies in the American continent.
4. For coordination purpose the right to receive and the obligation to supply information pertaining to the use of radio frequencies.
5. Exchange of information.
6. Related costs of participation are nil.
7. With the possible exception of International police services.
Canada gains nothing that is not also achieved under the current ITU Radio Regulations.
8. The arrangement is out of date and to be meaningful would need revision.
9. From a technical point of view it need not be maintained. However, from a diplomatic or political point of view there may be reasons to retain it. But it needs updating.
10. In keeping with above remarks updating is required. It is typical of these arrangements that they are outdated by new ITU Radio Regulations and no channels are outlined or provided for easy revision.

1. AGREEMENT ON THE ALLOCATION OF CHANNELS FOR RADIO BROADCASTING
(FM BROADCASTING IN FREQ. BAND 88-108 MC/S).
C.T.S No. 30, 1947.
2. Exchange of Notes (January 8 and October 15, 1947)
Signed by H.H. Wrong, Canadian Ambassador to U.S.A.
No expiry date. Still in force.
Also listed as still in force by (FCC rules-release July 1/69)
3. To coordinate the use of FM Broadcast Channels with coordination
zone 250 miles both sides of CAN/US border.
4. Mutual coordination of frequency assignments.
5. Exchange of information
6. Relative costs are nil.
7. We gain by the benefits of frequency coordination.
- 8.
9. Arrangement should be maintained.
10. Arrangement could be studied with a view to updating of appendices
if considered necessary.

1. AGREEMENT CONCERNING THE OPERATION AND MAINTENANCE OF THE LAND LINE COMMUNICATION SYSTEM BETWEEN EDMONTON, ALBERTA AND FAIRBANKS, ALASKA C.T.S. No. 6, 1948
2. Effective March 31, 1948. Signed by H.H. Wrong, Canadian Ambassador to the U.S.A. Upon agreement between US and Canada or 1 year notice by either Govt of intention to terminate.
It is still in force; see file 32-2-7.
3. Title is self-explanatory. The agreement forms the basis for negotiation of contracts between Canada and the United States re provision of communication circuits between Canada and Alaska.
4. It is a mutual agreement between Canada and United States regarding the provision of communication circuits by Canada and remuneration for same by the U.S. modifications to basic agreement are contained in legal contracts entered into as a result of the agreement.
5. Exchange of notes, with provision for supplementary arrangements.
6. Canada receives certain remuneration for services rendered.
7. It provides a basis for legal contracts between Canadian Communication organization (CNT) and the United States for the supply of communication facilities.
8. -----
9. It appears that the arrangements should be maintained.
10. There is some question of interpretation which is being studied by External Affairs and US counterparts.

1. AGREEMENT AND FINAL ACT OF A MEETING BETWEEN REPRESENTATIVES OF THE GOVERNMENTS OF THE BRITISH COMMONWEALTH AND OF THE GOVERNMENT OF THE UNITED STATES OF AMERICA (SEE NOTE 1 BELOW)
C.T.S. No. 2, 1950.
2. Date of signature August 12th, 1949 (See Note 2 below).
In force February 24th, 1950.
Still in force (amended October 1st, 1952, See Treaty Series 1952 No. 19). No expiry date stated.
3. The treaty relates to the establishment of direct telegraph circuits between Commonwealth countries (excluding Canada) and the United States of America and established ceiling rates for various classes of telegraph traffic and also the terminal and transit charges applying thereto.
4. The treaty only affects minor Canadian streams (the Canada - Continental U.S. telegraph traffic arrangement is under separate agreement) and hence the rights and obligations are minimal. (See note 3 below).
5. Participation is covered by recognition of the details of the treaty.
6. Related costs of participation - nil.
7. Canada obtains very little out of the treaty which primarily is of benefit to other Commonwealth countries and the United States of America.
8. None.
9. There would be no advantage in Canada trying to cease the agreement.
10. At some time in the not too distinct future the ceiling rates and terminal and transit charges may need to be renegotiated.

NOTES:

- 1) This treaty is signed by: U.S.A., U.K., Canada, Australia, New Zealand, The Union of South Africa, India, Pakistan, Ceylon and Southern Rhodesia
- 2) This treaty replaces the Telecommunications Agreement between the Government of the United States of America and British Commonwealth Governments signed at Bermuda on 4th December, 1945.
- 3) This treaty covers telegraph traffic exchanged between Canada and:-
Guam, Wake Island, Midway, Hawaii, U.S. Virgin Islands, American Samoa, Puerto Rico, Burma, Indonesia, Israel, Jordan, Netherlands, Netherland Antilles, South Africa, South West Africa.

DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA
CONTINENTAL RADAR DEFENCE

C.T.S. No. 31, 1951.

This is a defence agreement concerning the extension and coordination of the Continental Radar Defence system. It deals with the construction of these stations and either it was not considered necessary or it was overlooked but the agreement does not contain the usual telecommunications clause and therefore as it exists does not concern telecommunications.

2. Signed August 1, 1951, by H.H. Wrong, Canadian Ambassador to the USA.

1. RADIO CONVENTION CANADA AND USA RE OPERATION BY CITIZENS OF EITHER COUNTRY OF CERTAIN RADIO EQUIPMENT OR STATIONS IN EITHER COUNTRY. C.T.S. No. 7, 1952.
2. Signed February 8, 1951 by Lionel Chevrier, Minister of Transport. In force May 15, 1952 (for a period of five years and thereafter until terminated by either party on six months notice. It is still in force (FCC rules also list it as still in force).
3. It is a reciprocal agreement which provides a legal means whereby citizens of either country may operate certain radio equipment or stations in either country. I.E. Canadian Amateurs may operate such stations in the U.S. and vice versa. Mobile radio units in public safety vehicles, etc. may be operated in both countries.
4. Mutual cooperation with the United States.
5. N/A
6. Cost of participation is nil.
7. Citizens of Canada are able to enjoy the convenience and benefits gained from being able to operate certain radio equipment in the United States.
8. Arrangement has overcome problems rather than create any.
9. Arrangement should be maintained.
10. No changes are recommended.

1. TELEVISION AGREEMENT, CANADA AND USA RE ALLOCATION OF TELEVISION CHANNELS
C.T.S. No. 13, 1952.
- 2 Exchange of Notes April 23, 1952 and June 23, 1952
Signed by L.B. Pearson, Secretary of State for External Affairs.
Still in force (FCC rules also list it as being in force).
3. To provide a basis for the coordination of Television channel.
assignment within the coordination zone in Canada and United States.
4. Mutual cooperation with the United States.
5. Exchange of notes.
6. Costs of participation are nil.
7. The benefits gained are those of mutual coordination of television
channel assignments.
- 8.
9. Arrangement should be maintained.
10. No changes are recommended.

1. TELECOMMUNICATIONS SUPPLEMENTARY AGREEMENT.
C.T.S. No. 19, 1952 (Supplement to C.T.S. No. 2, 1950)
2. Date of signature - October 1st, 1952.
In force - October 1st, 1952
Still in effect. No expiry date specified.
3. Modifies Article 2 of the main agreement (C.T.S. No. 2, 1950), particularly reduces ceiling collection charges.
4. The treaty only affects minor Canadian streams (the Canada - Continental U.S. telegraph traffic arrangement is under separate agreement) and hence the rights and obligations are minimal. (See note 3 below).
5. Participation is covered by recognition of the details of the treaty.
6. Related costs of participation - nil.
7. Canada obtains very little out of the treaty which primarily is of benefit to other Commonwealth countries and the United States of America.
8. None.
9. There would be an advantage in Canada trying to cease the agreement.
10. At some time in the not too distinct future the ceiling rates and terminal and transit charges may need to be renegotiated.

NOTES:

- 1) This treaty is signed by: U.S.A., U.K., Canada, Australia, New Zealand The Union of South Africa, India, Pakistan, Ceylon and Southern Rhodesia
- 2) This treaty replaces the Telecommunications Agreement between the Government of the United States of America and British Commonwealth Governments signed in Bermuda on 4th December 1945
- 3) This treaty covers telegraph traffic exchanged between Canada and:-
Guam, Wake Island, Midway, Hawaii, U.S. Virgin Islands, American Samoa, Puerto Rico, Burma, Indonesia, Israel, Jordan, Netherlands, Netherland Antilles, South Africa, South West Africa.

1. AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA FOR THE PROMOTION OF SAFETY ON THE GREAT LAKES BY MEANS OF RADIO.
C.T.S. No. 25, 1952.
2. Signed at Ottawa, Feb. 21, 1952 by Lionel Chevrier, Minister of Transport.
Ratifications and in force Nov. 13, 1954.
Still in force.
3. Provides a common system of communication on the Great Lakes thereby contributing to the safety of life through communications.
4. The right to expect the benefits of a common safety service and the obligation to provide the facilities for participation in the common safety service I.E. provide a continuous guard on the distress frequency at Coast Stations.
5. Negotiation and consultation.
- 6.
7. As stated in Item 4 above.
8. The system requires modification in keeping with changing International Regulations. Present system is a DSB operation and new regulations will require a SSB operation. There is a strong feeling in Canada a complete change to a VHF system would be the best move. These problems have been recognized and action is now under way to negotiate a new or revised agreement with the United States.
9. An arrangement for a common safety communication system on the Great Lakes is desirable and should be maintained.
10. A change to an all VHF system is recommended.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES FOR THE ESTABLISHMENT OF UNITED STATES GLOBAL COMMUNICATIONS FACILITIES IN NEWFOUNDLAND.
C.T.S. No. 27, 1952.
2. Exchange of Notes November 4 and 8, 1952, signed by Brooke Claxton, Acting Secretary of State for External Affairs.
3. This is a defence agreement making land in Newfoundland available to the U.S. for the establishment of certain communications facilities.

It contains the clause that such technical matters as frequencies and powers and the location, making and lighting of antenna masts will be coordinated with the RCAF and DOT and will be subject to the approval of the DOT.

The Agreement is still in effect; however, we must assume the question of approval of frequencies and powers would now lie with the D.O.C.

1. AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE SEALING OF MOBILE RADIO/TRANSMITTING EQUIPMENT.
C.T.S. No. 1, 1953
2. Exchange of Notes March 9, and 17, 1953, signed by G. Ignatieff, for the Ambassador to the U.S.A.
It is still in force (FCC rules also indicate it is still in force).
3. It refers to T.S. 1947 No. 25 which is now cancelled and to the Convention between Canada and US re the operation, by citizens of either country, of certain radio equipment or stations in either country (TS 1952 No. 7). Its purpose is to continue the means whereby Canada may seal certain types of radio equipment installed in US vehicles entering Canada without necessity of removing such equipment from the vehicles.
4. Canada retains right to seal certain radio equipment in US vehicles entering Canada.
5. -----
6. -----
7. Conflict between Domestic regulations and the Convention with the U.S. (TS 1952 No. 7) is removed.
8. No problems.
9. Arrangement should be retained.
10. No changes recommended.

1. DEFENCE AGREEMENT BETWEEN CANADA AND UNITED STATES OF AMERICA.
TRANSFER OF LORAN STATIONS IN NEWFOUNDLAND TO THE CANADIAN GOVERNMENT.
C.T.S. No. 12, 1953.
This is an agreement of transfer of Responsibility for the Loran
Stations in Newfoundland to the Canadian Government.
It is an accomplished fact. No further action is required or
possible.
2. Signed on June 30, 1953 by L.D. Wildgress, for the Secretary of
State for External Affairs.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA REGARDING THE CONSTRUCTION AND OPERATION OF A LORAN STATION BY THE UNITED STATES COAST GUARD AT CAPE CHRISTIAN, BAFFIN ISLAND.
C.T.S. No. 6, 1954.
2. Exchange of notes (May 1 and 3, 1954).
Signed by Brooke Claxton, Acting Secretary of State for External Affairs.
Agreement was for ten years and thereafter as long as both countries agree that the station is required.
The agreement is still in force and the Loran Station is still being operated by the United States.
3. As stated in title (Item 1 above).
4. Canada has the right to assume operation of the Station, the cost being shared by the two countries.
Canada has the right to approve technical matters such as frequencies and powers.
Scientific data obtained in the course of operation of Cape Christian shall be transmitted to the Canadian Government.
5. Exchange of notes.
6. There is no cost to Canada until such time as we exercise the right to take over operation of the station.
7. Canada gains the use of the Loran navigational system in Canadian territory, and the benefits of mutual defence interests.
- 8.
9. The arrangement should be continued as long as it is considered necessary.
10. No changes are recommended.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA REGARDING THE ESTABLISHMENT OF A DISTANT EARLY WARNING SYSTEM.
C.T.S. No. 8, 1955.
2. Exchange of notes, May 5, 1955.
Signed by A.D.P. Heeney, Ambassador of Canada to U.S.A.
A basic period of 10 years - changes to be mutually agreed.
It is still in force.
3. The agreement establishes the basis on which United States could build, maintain and operate the DEW system in Northern Canada.
4. Canada has the right to take over the operation of any of the stations, Canada has the right to approve telecommunication facilities and such technical matters as frequencies and power, etc.
Canada has right to any scientific information obtained.
5. Exchange of notes.
6. In the event Canada assumes operation of any of the stations we must also assume cost of operation.
7. Benefits of mutual defence interests.
- 8.
9. The arrangement so far as it involves telecommunication should be maintained.
10. No changes are recommended.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA
FOR THE ESTABLISHMENT OF CERTAIN RADAR STATIONS IN THE NEWFOUNDLAND-
LABRADOR AREA.

C.T.S. No. 29, 1955.

2. Signed at Ottawa, June 13, 1955 by L.B. Pearson, Secretary of State
for External Affairs.

This is the usual defence agreement which contains the usual telecom-
munication clause re the right of Canadian Government to approve these
facilities so far as the technical matters of frequency and power are
concerned.

1. DEFENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA FOR THE ESTABLISHMENT OF CERTAIN RADAR STATIONS IN BRITISH COLUMBIA, ONTARIO AND NOVA SCOTIA, TO AUGMENT THE RADAR EXTENSION IN THE SOUTHERN PART OF CANADA.

C.T.S. No. 30, 1955

2. Signed at Ottawa, June 15, 1955, by L.B. Pearson, Secretary of State for External Affairs.

This is another defence agreement which contains the usual telecommunication clause regarding the right of the Dept. of Transport to approve telecommunication facilities so far as the technical matters of frequency and power are concerned.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA
CONCERNING THE ORGANIZATION AND OPERATION OF THE NORTH AMERICAN
AIR DEFENCE COMMAND (NORAD).
C.T.S. No. 9, 1958.
2. Signed at Washington May 12, 1958, by Norman A. Robertson, Ambassador
of Canada to U.S.A.
This is a defence agreement as the title indicates and it does not
specifically mention Telecommunications in any way.

1. DEFENCE 1 - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING AERIAL REFUELING FACILITIES IN CANADIAN TERRITORY.

C.T.S. No. 15, 1958.

2. Signed at Ottawa, June 20, 1958, by the Secretary of State for External Affairs.
Agreement still in force.
3. This is a defence agreement as indicated by the title. There is a telecommunication clause which requires U.S. authorities to obtain approval of DOT for the establishment of radio stations associated with the refueling project. Such stations to be established and operated in accordance with licences issued by DOT.

1. TELECOMMUNICATION:- MULTILATERAL DECLARATION TO DENOUNCE PART II OF THE INTER-AMERICAN RADIO COMMUNICATION CONVENTION (TSA 38 #18). C.T.S. No. 32, 1958.
2. Done at Washington, December 20, 1957.
In force in Canada December 20, 1958.
3. This multilateral declaration cancels Part II of the Inter-American Radio Communication Convention thereby terminating the operation of the Inter-American Radio Office (OIR) in Habana, Cuba, and arranged for the Pan American Union to perform the function with respect to the exchange of broadcasting notifications which had been performed by the OIR.
4. We cancelled our obligation to support the OIR and agreed to shift our financial support for the exchange of broadcasting notifications to the Pan American Union.
5. Financial contribution and exchange of notifications.
6. Our financial contribution should be approx. \$6,000.00 annually. We have not however made such a contribution for a number of years as we have been unable to get an account from the organization.
7. The benefit of the exchange of broadcasting notifications.
8. The problems resulting from this arrangement are very complicated. The notification exchange function was carried on by the Pan American Union from the same office in Habana with the same staff as the old OIR and its function was relatively satisfactory until the new Government took over in Cuba. At this point the service began to deteriorate and finally came to a complete halt. Eventually the Cuban Government notified that under the terms of the Inter-American Radio Convention they were taking over a caretaker operation of the OIR. However, the OIR was no longer in existence so the Cuban Govt. were really saying they were taking over on a non-existent organization. External Affairs have been trying to clarify the situation with the United States but it is a delicate situation and little progress that we in DOC are aware of has been made.
9. Its not a question of continuing the arrangement of CTS No. 32, 1958 that is an accomplished fact. It is desirable; however, that the broadcast notification exchange be carried on in a more efficient manner.
10. Recommendations for changes and improvements need to be developed in cooperation with External Affairs.

1. DEFENCE AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE CONSTRUCTION AND EQUIPMENT REQUIRED FOR THE AUGMENTATION OF COMMUNICATION FACILITIES AT CAPE DYER, BAFFIN ISLAND (DEW EAST).
C.T.S. No. 9, 1959.
2. Exchange of Notes, April 13, 1959, signed by D.V.L., Acting Secretary of State for External Affairs.
No expiry date mentioned.
Deemed to have taken effect as from January 15, 1959
3. It is an agreement which gave the United States permission to augment certain communication facilities at Cape Dyer, Baffin Island to support the Greenland Extension of the DEW line (DEW East).
3. A telecommunications clause in the agreement gives Canada (DOT) the right to approve and licence and under certain conditions negotiate the take over of the installations in Canada.
5. Recognition of the agreement.
6. Relative costs are nil.
7. Mutual defence interests.
8. Nil
9. N/A
10. No changes recommended.

1. DEFENCE EXCHANGE OF NOTES BETWEEN CANADA AND THE U.S.A. CONCERNING THE ESTABLISHMENT IN CANADA OF SHORT RANGE TACTICAL AIR NAVIGATION FACILITIES AT NINE SITES (TACAN).
C.T.S. No. 10, 1959.
2. Exchange of notes, May 1, 1959.
Signed by D.V.L., Acting Secretary of State for External Affairs.
The agreement is still in effect.
3. This is an agreement to permit the United States to establish TACAN facilities at nine locations in Canada.
This is a defence agreement which contains a telecommunications clause which requires U.S. Military Authorities to obtain approval from the DOT for the establishment of radio stations associated with this project and requires such stations to be licensed by the DOT.

1. DEFENCE - EXCHANGE OF NOTES BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE UNITED STATES OF AMERICA GOVERNING THE ESTABLISHMENT OF AN INTEGRATED COMMUNICATION SYSTEM TO SUPPORT THE BALLISTIC MISSILE EARLY WARNING SYSTEM (BMEWS)
C.T.S. No. 12, 1959.
2. Ottawa July 13, 1959, signed by Norman A. Robertson, Secretary of State for External Affairs.
3. This is a defence agreement as stated in the title. It includes a Telecommunications clause which requires that U.S. Military authorities shall obtain approval of DOT for the establishment and operation of radio stations associated with this project and that such stations shall operate in accordance with the terms of licences issued by the DOT. However, where possible, telecommunication circuits shall be provided through existing Canadian public carriers.

1. DEFENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA WITH ANNEX CONCERNING THE CONTINUED UTILIZATION OF THE EXISTING UPPER ATMOSPHERE RESEARCH FACILITIES AT FORT CHURCHILL, MANITOBA.
C.T.S. No. 12, 1960
2. Ottawa, June 14, 1960, signed by H.C. Green, Secretary of State for External Affairs.
3. This is a defence agreement for the continued operation of the test facilities at Fort Churchill, Manitoba as mentioned in the title. The agreement contains the usual telecommunication clause regarding U.S. Authorities obtaining the approval of DOT for any radio stations associated with the project and that such stations must be licensed by the DOT.

1. SCIENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE ESTABLISHMENT OF A SATELLITE TRACKING STATION NEAR ST. JOHN'S, NEWFOUNDLAND.
C.T.S. No. 19, 1960.
2. Exchange of Notes, Ottawa, August 24, 1960, signed by H.C. Green, Secretary of State for External Affairs.
Still in effect.
3. This is an agreement for Canada and the United States to cooperate in establishing a satellite tracking station in Newfoundland. It contains a telecommunications clause to the effect established commercial communication systems will be used where practical and that Canada will be responsible for appropriate approvals and the assignment of frequencies.
The station has been licensed from the beginning and is still in operation.

1. DEFENCE - AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING COST SHARING AND RELATED ARRANGEMENTS WITH RESPECT TO PLANNED IMPROVEMENTS IN THE CONTINENTAL AIR DEFENCE SYSTEM (WITH ANNEX).
C.T.S. No. 9, 1961.
2. Exchange of Notes, September 27, 1961, signed by H.C. Green, Secretary of State for External Affairs.
In force, September 27, 1961 for a period of ten years unless agreed otherwise and thereafter as long as the two parties agree it is necessary.
3. This is a defence agreement concerning the establishment of gap filler radar sites, one SAGE Combat Centre/Direction Centre and two BOMARC missile squadrons. There is no telecommunication clause but there is one concerning radio interference which provides that in selecting the various sites consideration will be given to the avoidance of interference of other use of radio frequencies.

1. DEFENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE ADDITION OF CAPE DYER TO THE ANNEX TO THE AGREEMENT ON MAY 1, 1959 (TS 1959 NO. 10) RELATING TO SHORT-RANGE TACTICAL AIR NAVIGATION FACILITIES IN CANADA.
C.T.S. No. 14, 1961.
2. Exchange of Notes, September 19 and 23, 1961, signed by H.C. Green, Secretary of State for External Affairs.
3. As the title implies this is only an addition to Canada Treaty Series No. 10, 1959.

1. RADIO - EXCHANGE OF NOTES BETWEEN CANADA AND VENEZUELA CONCERNING AMATEUR RADIO STATION COMMUNICATIONS
C.T.S. No. 16, 1961
2. Exchange of notes, Caracas, November 22, 1961, signed by A.D. Ross, Chargé d'Affaires, ad interim, for Canada in Venezuela.
Still in force. (See additional agreement signed 29-10-68).
3. This agreement provides that Amateur stations of Canada and Venezuela may exchange messages or other communications from or to third parties.
4. Mutual recognition of the agreement.
5. Exchange of Notes.
6. Costs are nil.
7. Canadian Amateurs and other citizens benefit from the exchange of third party traffic.
8. No problems.
9. The arrangement should be maintained.
10. Improvements and additional privileges have been provided by an additional agreement signed at Caracas, October 29, 1968 which came into effect November 13, 1968. This agreement allows licensed radio amateurs of one country to operate their stations in the territory of the other country while temporarily resident therein.

1. RADIO - EXCHANGE OF NOTES BETWEEN CANADA AND MEXICO CONCERNING
AMATEUR RADIO STATION COMMUNICATIONS
C.T.S. No. 9, 1962
2. Exchange of Notes, July 30, 1962, signed by W.A. Irwin, Canadian
Ambassador to Mexico.
Entered into force August 29, 1962.
Still in force.
3. This agreement provides that Amateur Radio Stations of Canada
and Mexico may exchange messages or other communications from
or to third parties.
4. Mutual recognition of agreement.
5. Exchange of notes.
6. Costs are nil.
7. Canadian Amateurs and other citizens benefit from the exchange
of third party traffic.
8. No problems.
9. The arrangement should be continued.
10. No changes recommended.

1. RADIO - EXCHANGE OF NOTES BETWEEN CANADA AND CHILE CONCERNING AMATEUR RADIO STATION COMMUNICATIONS.
C.T.S. No. 14, 1962.
2. Exchange of notes Santiago October 4, 1962, signed by J.Y. Grenon, Chargé d'Affaires to Chile.
Entered into force October 14, 1962.
Still in force.
3. This agreement provides that Amateur Radio Stations of Canada and Chile may exchange messages or other communications from or to third parties.
4. Mutual recognition of agreement.
5. Exchange of notes.
6. Costs are nil.
7. Canadian Amateurs and other citizens benefit from the exchange of third party traffic.
8. No problems.
9. The arrangement should be continued.
10. No changes recommended.

1. RADIO - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING COORDINATION AND USE OF RADIO FREQUENCIES.
C.T.S. No. 15, 1962.
2. Exchange of notes Ottawa October 24, 1962, signed by H.C. Green, Secretary of State for External Affairs.
Entered into force October 24, 1962.
Still in force.
3. This agreement establishes the basis for coordinating the use of frequencies above 30 Mc/s in Canada and the United States and outlines the procedures to be followed and the technical parameters to be considered.
4. Mutual adherence to the agreement.
5. By negotiation and exchange of notes.
6. Related costs are nil.
7. Advantages gained from the coordination of frequency assignments. The mutual understanding and common aims developed through the close cooperation and regular contacts at the working level.
8. There are coordination problems but the agreement provides the channels through which these can be overcome.
Coordination of all frequency bands above 30 Mc/s is not provided for and in this sense the agreement could be made more inclusive.
9. The arrangements should be continued.
10. The arrangements become out of date from time to time and a review is probably desirable at this time or in the near future.

1. RADIO - EXCHANGE OF NOTES BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE REPUBLIC OF EL SALVADOR CONCERNING AMATEUR RADIO STATION COMMUNICATIONS.
C.T.S. No. 3, 1963.
2. Exchange of notes February 20, 1963, signed by J.L. Delisle, Ambassador of Canada to Costa Rica.
Entered into force April 9, 1963.
Still in force.
3. This agreement provides that Amateur Radio Stations of Canada and El Salvador may exchange messages or other communications from or to third parties.
4. Mutual recognition of agreement.
5. Exchange of notes.
6. Costs are nil.
7. Canadian Amateurs and other citizens benefit from the exchange of third party traffic.
8. No problems.
9. The arrangement should be continued.
10. No changes recommended.

1. RADIO - EXCHANGE OF NOTES BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF BOLIVIA CONCERNING AMATEUR RADIO STATION COMMUNICATIONS.
C.T.S. No. 5, 1963.
2. Exchange of Notes La Paz May 31, 1963, signed by Freeman M. Tovell, Ambassador of Canada to Bolivia.
Entered into force May 31, 1963.
Still in force.
3. This agreement provides that Amateur Radio Stations of Canada and Bolivia may exchange messages or other communications from or to third parties.
4. Mutual recognition of agreement.
5. Exchange of notes.
6. Costs are nil.
7. Canadian Amaterus and other citizens benefit from the exchange of third party traffic.
8. No problems.
9. The arrangement should be continued.
10. No changes recommended.

1. RADIO - EXCHANGE OF NOTES BETWEEN GOVERNMENT OF CANADA AND THE GOVERNMENT OF PERU CONCERNING AMATEUR RADIO STATIONS COMMUNICATIONS. C.T.S. No. 11, 1964.
2. Exchange of notes Lima May 8, 1964, signed by Freeman M. Tovell, Ambassador of Canada to Peru.
In force May 8, 1964.
Still in force.
3. This agreement provides that Amateur Radio Stations of Canada and Bolivia may exchange messages or other communications from or to third parties.
4. Mutual recognition of agreement.
5. Exchange of notes.
6. Costs are nil.
7. Canadian Amateurs and other citizens benefit from the exchange of third party traffic.
8. No problems.
9. The arrangement should be continued.
10. No changes recommended.

1. DEFENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE CONTINENTAL RADAR DEFENCE SYSTEM.
C.T.S. No. 16, 1964.
2. Washington, May 25, 1964.
Signed by H.B. Robinson, Chargé d'Affaires, Canadian Embassy, Washington.
3. This agreement covers the phasing out of certain radar stations of the continental radar defence system within Canada and refers to TS 1951 No. 31
TS 1961 No. 5
TS 1961 No. 7

1. SCIENCE - EXCHANGE OF NOTES BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE ESTABLISHMENT OF A LORAN-C STATION IN NEWFOUNDLAND.

C.T.S. No. 19, 1964.

2. Exchange of notes - Ottawa, September 16, 1964.
Signed by Paul Martin, Secretary of State for External Affairs.
3. This agreement provides the terms under which Canada (DOT) and the United States (USCG) may establish a Loran C Station in Newfoundland in the vicinity of Cape Race. Certain technical characteristics are outlined including frequency and powers. There is also a telecommunications clause regarding the provision of communication circuits and the assignment of frequencies.
4. This is a cooperative effort. Canada provided the land and is obliged to operate the station for the USCG who pay the operating costs of the station.
5. Mutual cooperation in meeting the requirements of the agreement.
6. The possibility of Canada assuming the operations costs of the station is provided for
7. Canada benefits from the use of the Loran C Navigation System in Canadian waters.
8. There do not appear to be any problems.
9. The arrangement should be maintained.
10. No recommendation for changes at this time.

1. TELECOMMUNICATIONS: AGREEMENT CONCERNING A GLOBAL COMMUNICATIONS SATELLITE SYSTEM.
C.T.S. No. 24, 1964
2. Date of Signature: August 20th, 1964.
The agreement was signed for Canada by George P. Kidd, Minister for External Affairs. The Special Agreement was signed by D.F. Bowie and C.S. Gregory of C.O.T.C.
In force: August 20th, 1964.
Remains in effect until the entry into force of the Definitive Arrangements which are presently being discussed at Government level.
3. Provides for International cooperation in the provision of the design, development, construction, establishment, maintenance and operation of the space segment of the Global Commercial Communications Satellite System.
4. Provides Canada with an ownership interest in the space segment in proportion to our estimated use of the system and also allows C.O.T.C. to enter directly into appropriate traffic agreements with respect to the use of channels of communication provided by the system established under this agreement.
5. By contributions towards the cost of the space segment, and through representation on the Interim Communications Satellite Committee and through participation in use of Global Communications System.
6. Expenditures and commitments to date by Intelsat amount to approximately \$200,000,000 (U.S.) of which \$7,500,000 (U.S.) is Canada's share. C.O.T.C. pays 3.75% of design, development, construction and establishment of the space segment.
7. Of great benefit to Canada, as much of our overseas traffic growth is now handled via satellite facilities. At the present time, C.O.T.C. is operating approximately 90 satellite circuits; however, it is desirable to have a good mix of satellite and cable circuits. Membership in the ICSC also gives Canada a voice in the international effort to create a more permanent international satellite communication system.
8. These points are under active consideration at Government level.
- 9.
- 10.

1. SCIENCE - AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING THE CONTINUED OPERATION OF THE CHURCHILL RESEARCH RANGE.
C.T.S. No. 9, 1965
2. First exchange of notes, June 11, 1965 effective from June 14, 1965.
Second exchange of notes, effective January 1, 1966.
Signed by Paul Martin, Secretary of State for External Affairs.
Expiry date June 30, 1970.
3. This is a science agreement with the National Research Council being the Canadian organization primarily concerned. There does not appear to be a Telecommunications clause in the agreement therefore it can be assumed that any telecommunications authorization would be in the name of N.R.C.

1. AGREEMENT BETWEEN CANADA AND THE UNITED STATES OF AMERICA CONCERNING GROUND-TO-AIR COMMUNICATIONS FACILITIES FOR DEFENCE PURPOSES IN CONNECTION WITH THE DISTANT EARLY WARNING SYSTEM.
C.T.S. No. 24, 1965
See also C.T.S. No. 31, 1951
C.T.S. No. 8, 1955
C.T.S. No. 14, 1952
2. Ottawa, December 1, 1965
Signed by Paul Martin, Secretary of State for External Affairs.
Entered into force December 1, 1965 for period of ten years and thereafter until terminated by mutual agreement.
It is still in force.
3. It enables the United States Air Force to establish and operate ground to air communication facilities for mutual defence purpose in Northern Canada.
4. Canada enjoys the benefits of improved mutual defence facilities in the Canadian North and is obliged to facilitate the establishment of such facilities in accordance with the terms of the agreement.
5. Exchange of notes.
6. Relative costs are nil.
7. As stated in the above.
8. Problems are nil.
9. The arrangement should be continued as long as required.
10. No recommendation for changes at this time.

1. TELECOMMUNICATIONS. SUPPLEMENTARY AGREEMENT ON ARBITRATION AS PROVIDED FOR BY ARTICLE 14 OF THE SPECIAL AGREEMENT SIGNED PURSUANT TO ARTICLE 11 OF THE AGREEMENT ESTABLISHING INTERIM ARRANGEMENTS FOR A GLOBAL COMMERCIAL COMMUNICATIONS SATELLITE SYSTEM.
C.T.S No. 25, 1966.
2. Done at Washington, June 4, 1965 and signed by Canada on the same date, by D.F. Bowie and C.S. Gregory of C.O.T.C.
Entered into force November 21, 1966.
Expires with Interim Agreement.
3. It provides arbitration procedure in the event it is required under the Interim Satellite Arrangements. See C.T.S. No. 24, 1964
4. Canada has the right to submit any dispute to legal arbitration
We are obliged to provide representation or nominees who may be required to serve on the tribunal panel.
5. Participation as tribunal panel members as required.
6. Relative costs are nil except where Canada is involved in a dispute. Cost of the tribunal are shared by the parties involved in a dispute.
7. Canada gains the benefits of arbitration in the event of being involved in a legal dispute.
8. -----
9. The arrangement should be maintained.
10. -----

1. CONSTITUTION OF THE COMMONWEALTH TELECOMMUNICATIONS ORGANIZATION.
2. The Constitution of the present Organization was agreed by Commonwealth Governments on the recommendation of the Commonwealth Telecommunications Conference 1966, and was accepted through an Order in Council (1966-22-77) of December 5th, 1966, accepting the conclusions and recommendations of the conference. N.B.
3. The purpose of the Organization is to provide the machinery for Commonwealth consultation and cooperation in the field of the external telecommunications needs of Commonwealth countries; also, to promote the efficient exploitation and development of the Commonwealth external telecommunications system, within the framework of collaborative financial arrangements.
4. Canada has the right, together with other Commonwealth countries, to exploit the Commonwealth external telecommunications system for their traffic, under the obligation of accepting the duties and responsibilities as set out in the Constitution.
5. Canada's participation is through its signature of the Financial Agreement of the Organization and through representation on the Commonwealth Telecommunications Council.
6. Canada absorbs 8% of the expenses of the Organization's Council. For the year ending March 31st, 1970, Canada's share of Council expenses is estimated at \$40,000.
7. The Commonwealth arrangements have been of benefit to Canada as they have allowed Canada to develop its external telecommunications facilities to a degree which would have been more difficult to attain in isolation.
8. The major problem with the present arrangements is that they do not cover all facilities, the notable exceptions being services via the long range wide-band cable systems and services via satellite facilities. This situation can create conflict between systems and between partners. The problem is under active consideration by the Council in an attempt to develop a unified system of accounting which would embrace all traffic and all media.
9. Yes, in a revised form (see 8. above.)
10. Canada is playing a major role in the studies which hopefully will lead to the new financial arrangements referred to in 8. above.

N.B. The Commonwealth Telecommunications Organization continues the Commonwealth Partnership for which the financial arrangements are embraced in a Financial Agreement (1969) which replaces the Commonwealth Telegraph Agreements of 1948 and 1963.

1. TELECOMMUNICATIONS PRE-SUNRISE OPERATIONS OF CERTAIN STANDARD
(AM) RADIO BROADCASTING STATIONS AGREEMENT BETWEEN CANADA AND
THE UNITED STATES OF AMERICA
(It has not as yet been issued as a Canada Treaty Series)
C.T.S. No. _____ 1967.
2. Exchange of notes March 31 and June 12, 1967
Entered into force June 12, 1967
Signed by Paul Martin, Secretary of State for External Affairs
for limited periods prior to local sunrise, using all or part
of their authorized daytime facilities.
4. As outlined in agreement.
5. Exchange of notes and coordination.
6. Relative costs are nil.
7. Certain Broadcasting stations obtain the benefit of operation on
higher power prior to the local sunrise.
8. -----
9. The arrangements should be maintained.
10. -----

1. RECIPROCAL AMATEUR RADIO OPERATING AGREEMENT BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF VENEZUELA.
C.T.S. No. _____ 1968.
2. Signed at Caracas, October 29, 1968, by Jean Luc Pépin, Minister of Industry, Trade and Commerce.
Entered into force November 13, 1968.
Still in force.
3. It is a reciprocal agreement which permits licensed radio operators of one country to be authorized to operate their stations in the territory of the other country while temporarily resident therein.
4. Mutual cooperation.
5. Mutual agreement and signing of agreement.
6. Related costs of participation are nil.
7. Canadian Amateur radio operators gain the privilege of operating their stations in Venezuela, if they happen to be residing in that country on a temporary basis.
8. No problems.
9. The arrangement should be maintained.
10. No changes required.

1. NORTH AMERICAN REGIONAL BROADCASTING AGREEMENT.
2. Done at Washington, 15th of November 1950
Signed by C.P. Edwards, Assistant Deputy Minister (Air),
Department of Transport.
 - No expiry date stated.
 - It is still in force.Canada as a member of ITU was a signatory to this agreement
November 15, 1950.
3. This agreement is a regional agreement within the meaning of
Article 41 of the International Telecommunication Convention,
Atlantic City (1947) - (Article 45 Montreux Convention 1965)
The purpose of this agreement is to establish fair and equitable
principles governing, and to regulate, the common use of the
broadcasting band in the North American Region so that each
country within the Region may make the most effective technical
use thereof with the minimum of interference between broadcasting
stations.
4. Canada has the right to expect and the obligation to give the
consideration and cooperation provided for by this agreement.
5. The original Plenipotentiary Conference, any future conference,
which is deemed necessary, and adherence to the provisions of
the agreement.
6. The relative costs of participation are nil.
7. Canada enjoys the benefit and protection of the planned use of
the radio spectrum for radio broadcast purposes.
8. Problems are nil.
9. The arrangement should be maintained.
10. No recommendation is made for change at this time.

1. INTERNATIONAL TELECOMMUNICATION UNION
TELEGRAPH REGULATIONS (GENEVA REVISION 1958)
(Annexed to the International Telecommunication Convention)
2. Done at Geneva, the 29th of November 1958
Signed by W.E. Connelly, Superintendent Radio, Department
of Transport.
Expiry date not stated.
Still in force.
Canada first signed acceptance of the Telegraph Regulations in 1937.
3. The Telegraph Regulations provide for the standardization of
message format, routing, classification, rates, charges and
accounting for all international telegraph traffic.
4. The right to participate and vote in all international forums
concerning telegraph regulations and the obligation to abide
by our undertaking to adhere to these regulations.
5. As a member of the International Telecommunication Union we may
participate in any conferences which concern the Telegraph
Regulations.
6. The related costs are contained in Canada's annual contribution
to the overall expenses of the International Telecommunication
Union.
7. Canada enjoys the benefits of coordinated and planned telegraph
communications with other member countries of the ITU who have
accepted the Telegraph Regulations.
8. No serious problems exist with respect to the Telegraph Regulations.
9. The arrangements should be maintained.
10. It is now over ten years since the current TELEGRAPH Regulations
were established, they would probably benefit from a review and
updating within the near future.

1. TELEPHONE REGULATIONS (GENEVA REVISION 1958)
ANNEXED TO THE INTERNATIONAL TELECOMMUNICATION CONVENTION.

2. Done at Geneva the 29th of November 1958

- No expiry date indicated.
- It is still in force.

While Canada is a member of the ITU we have not yet signed acceptance of the Telegraph Regulations, since in the opinion of the telephone industry in Canada the regulations are too detailed in nature and therefore too restrictive to be in the best interests of telephone communications in Canada.

1. THE INTERNATIONAL TELECOMMUNICATION UNION

Convention Montreux 1965.

2. Done at Montreux Switzerland 12th November 1965, signed by F.G. Nixon Director of Telecommunications, Department of Transport.

No expiry date indicated. However, ITU Plenipotentiary Conferences are held approximately every 5 years at which time new conventions are signed.

The Montreux Convention of 1965 is still in force.

3. The purpose of this Convention and the International Telecommunication Union is as outlined in Article 4 of the Convention.

4. As a member of the ITU, Canada is entitled to participate in conferences of the Union, is eligible for election to any of its organs and shall have one vote at all conferences attended and in all consultations carried out by correspondence.

The obligations are to abide by the provisions of the convention and contribute to the expenses of the Union.

5. As a member of the ITU, Canada is eligible to attend the Plenipotentiary Conferences of the Union, all administrative conferences and participate in the work of the CCIR and the CCITT. As an elected member, Canada participates in the annual meeting of the Administrative Council.

6. By free choice Canada contributes 18 out of a total of 475 contributory units or approximately 3.8% of Union annual expenses. This amounts to approximately \$245,000 per year.

7. Canada has a voice and is able to participate in the international negotiations concerning telecommunications. We benefit from the cooperation engendered by such negotiations and from the protection we receive there from our telecommunication facilities.

8. There are of course many problems, each member country has its own interests to look after and therefore opinions are not always the same. In these circumstances, decisions are often based on a compromise which often means that no one is completely satisfied and that in all probability the best solution to a problem has not been adopted. Generally speaking the problems are political, technical and economic and if they are to be solved with any efficiency at all a high degree of cooperation is and will continue to be required.
9. The arrangements should be maintained with such changes and amendments as time and circumstances may indicate.
10. It is recommended that Canada continue to support the principles of the ITU and continue to work to bring about improvements as we see them.

1. RADIO REGULATIONS 1968 EDITION

Additional Radio Regulations

Resolutions and Recommendations

As annexed to the International Telecommunication Convention

2. The Radio Regulations etc. 1968 Edition consist of _

The Radio Regulations etc. done at Geneva the 21st of December 1959 plus the amendments as contained in the:-

Final Acts of the Extraordinary Administrative Radio Conference to allocate frequency bands for space radiocommunication purposes. Done at Geneva 8th November 1963.

Final Acts of the Extraordinary Administrative Radio Conference for the preparation of a revised allotment plan for the Aeronautical Mobile (R) service.

Done at Geneva 29th April 1966.

Final Acts of the World Administrative Radio Conference to deal with matters relating to the Maritime Mobile Service. Done at Geneva 3rd November 1967.

- An expiry date is not stated.
- The Regulations as amended are still in force.

3. The Radio Regulations encourage cooperation among member countries to ensure the use of the radio spectrum in the most efficient and equitable manner. They promote the development of technical standards for radio facilities and the establishment of practices and procedures which increase the safety of life and the efficiency of communications by means of radio.
4. Canada obtains the right of protection for our radio facilities established in accordance with the Radio Regulations and has the obligation to abide by the Regulations in order that other countries radio facilities receive equal protection and consideration.

5. Participation is through our membership in the International Telecommunication Union, attendance at World Administrative Radio Conferences and the day to day cooperation with the permanent organs of the union in fulfilling the obligations imposed by the Radio Regulations.
6. The related costs are contained in Canada's annual contribution to the overall expenses of the International Telecommunication Union.
7. Canada enjoys the benefits of coordinated and planned radio communication facilities.
8. In any program, as broad in scope as the Radio Regulation, there is bound to be problems and the Radio Regulations are no exception. At the present time the frequency allocations and regulations related to space communications are inadequate and plans have been made to deal with this problem. Also the frequency plan for the high frequency bands allocated to the Maritime Mobile Service needs revising and it is anticipated that conference will be held in 1972 to deal with this problem. In a more general way, the Radio Regulations are considered by many to be ineffectual and there is a feeling that they should be made stronger and more binding. This presents very real problems when it is realized that mutual cooperation is the only real force for achieving improvements. To try to achieve results by adopting stronger regulations without also finding a mutually satisfactory means of enforcing such regulations may well prove to be a retrograde step in that existing cooperation may be diminished.
9. The arrangements should certainly be continued.
10. Many changes and improvements are possible and Canada's efforts to find and effect these improvements should be continued and augmented in every possible way.

- (1) AGREEMENT TERMINATING THE COMMONWEALTH TELEGRAPHS AGREEMENTS
SIGNED AT LONDON ON 11 MAY 1948 AND 25 JULY 1963

Treaty Series No. 53 (1969) United Kingdom.

- (2) This multi-party Agreement was signed in London January 27th, 1969 by Mr. C.S.A. Ritchie, High Commissioner for the Government of Canada.

In force April 1st, 1969 and continuing ad infinitum.

- (3) Purpose:

- (a) to agree to terminate the Commonwealth Telegraph Agreements of 1948 and 1963.
- (b) to agree to settle as soon as possible accounts which have not been settled prior to the coming into force of this Agreement.
- (c) to agree to contribute to the costs of any pension or gratuity including any increases payable to employees and their dependants engaged with the former Commonwealth Telecommunications Board.

- (4) Obligations are described in 3 above.

- (5) Participation relative to 3 (c) above is in the same proportions as the Governments, parties to this Agreement, contribute to the expenses of the new Commonwealth Telecommunications Council.

- (6) Costs relative to pensions are included in the budget of the Commonwealth Telecommunications Council.

- (7) Termination of the 1948 and 1963 Agreements and the simultaneous establishment of the Commonwealth Telecommunications Organization eliminates the former Commonwealth Telecommunications Board which involved expenses for the participation of resident Canadian and other members in London as well as a Board Chairman and Vice - Chairman. (Board premises and secretarial staff expense continues under the new Commonwealth Telecommunications Bureau.)

- (8) ---

- (9) This Agreement must be maintained since it is the legal instrument cancelling the other referenced Agreements and contains certain financial obligations (3 b and c above).

- (10) No change is necessary although it would have been better to have the financial obligations described in 3 (b) and (c) above included in the Financial Agreement (Treaty Series No. 54 - 1969 - UK).

1. RADIO BROADCASTING ARRANGEMENTS BETWEEN THE UNITED STATES, GREAT BRITAIN, CANADA AND NEWFOUNDLAND FOR THE PREVENTION OF INTERFERENCE BY SHIPS OFF THE COASTS OF THESE COUNTRIES WITH RADIO BROADCASTING.
U.K. Treaty Series No. 724-A; not in the Statutes at Large.
2. Exchange of Notes, September 18, 23 and October 1, 1925.
Signed by H. Chilton, Envoy Extraordinary and Minister, Plenipotentiary, Chargé d'Affaires ad interim of Great Britain.
Effective October 1, 1925.
No expiry date mentioned.
3. As title indicates.
4. Ships registered in Canada will be prohibited from using waves of 300 to 400 meters within two hundred and fifty miles of the coasts of the United States. The United States will reciprocate the measure. However, since the new ITU regulations have come into effect, neither Canada nor the U.S. operate under these frequencies. Hence, the agreement is inoperative.
5. _____
6. _____
7. _____
8. _____
9. No.
10. Arrangement should be formally terminated.

1. COMMONWEALTH TELECOMMUNICATIONS ORGANIZATION FINANCIAL AGREEMENT

Treaty Series No. 54 (1969) United Kingdom.

2. This multi-party Agreement was signed in London January 27th, 1969 by Mr. C.A.S. Ritchie, High Commissioner for the Government of Canada.

The Agreement came into force April 1st, 1969 and remains in effect between Partners remaining as and when any other Partner gives notice of withdrawal; such period of notice (to ensure settlement of accounts) shall include two complete financial years from the date of receipt of the notice by the Government of the United Kingdom.

3. Purpose: to constitute new financial arrangements between Partner Governments to replace those subsisting under the 1948 and 1963 Agreements which were terminated March 31st, 1969. (United Kingdom Treaty Series No. 53, 1969.)

4. Obligations of each Partner

- (a) To nominate a National Body for the purpose of operating and maintaining its common-user facilities and services.
- (b) To use the Commonwealth Telecommunications Council as a means of consultation on all matters substantially affecting the common-user system and to give due consideration to the recommendations and advice given by the Council.
- (c) To furnish Council with:
 - (i) particulars before making any substantial addition, extension or alteration to any portion of a Partner's facilities or services which forms or might form part of the common-user system;
 - (ii) forecasts of expenditures (including capital) and revenues;
 - (iii) statements of account for each financial year.
- (d) To share the aggregate expense of the common-user system in proportion to the net revenue derived from that system.
- (e) To agree that Council shall determine from time to time, the accounting and settlement procedures, including the manner of computing expense and revenue.

5. Participation and operation is as outlined under 4 above.

- 2 -

6. The cost of participation by each Partner essentially involves their preparation of accounts to enable Council and its Secretariat (Bureau) to carry-out a clearing house action.
Financial commitments are generally outlined in 4 (d) above.
7. The Commonwealth arrangements have been of benefit to Canada as they have allowed Canada to develop its external telecommunications facilities to a degree which would have been more difficult to attain in isolation.

Canada's National Body (COTC) benefits by substantial returns on its investments in facilities forming part of the common-user system.
8. The major problem with the present arrangements is that they do not cover all facilities, the notable exceptions being services via the long range wide-band cable systems and services via satellite facilities. This situation can create conflict between systems and between partners. The problem is under active consideration by the Council in an attempt to develop a unified system of accounting which would embrace all traffic and all media.
- 9 Yes, in a revised form. (see 8 above).
- 10 Canada is playing a major role in the studies which hopefully will lead to the new financial arrangements referred to in (8) above.

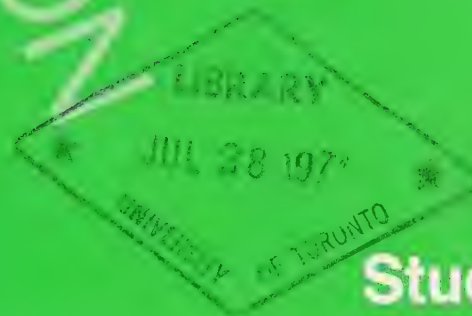
1. AGREEMENT ON COOPERATION BETWEEN UNITED STATES AND CANADA ON CIVIL EMERGENCY PLANNING
C.T.S. No. 13, 1967
2. Exchange of notes August 8, 1967 effective same date
Signed by the Secretary of State for External Affairs (Paul Martin)
No expiry date but may be terminated upon three months written notice
3. Provides for co-operation between Canada and the United States in civil emergency planning.

Note: The reference to communications is contained in para 7 of the statement of principles annexed to the agreement which provides

"When transportation, communication and related facilities and equipment which are subject to the control of one government are made available for emergency use to the other government, the charges to that government shall not exceed those paid by similar agencies of the government making these resources available. To this end, mutually acceptable arrangements shall be worked out as necessary by the two governments."

1. AGREEMENT BETWEEN THE GOVERNMENT OF CANADA AND THE GOVERNMENT OF THE UNITED STATES OF AMERICA RELATING TO THE OPERATION OF RADIO TELEPHONE STATIONS.
2. The date of signature was November 19, 1969 subject to ratification. Signed by Mitchell Sharp, Secretary of State for External Affairs. Instruments of ratification exchanged July 24, 1970 upon which date of agreement became effective.
No expiry date, however, agreement is subject to the termination by either Government giving six months notice in writing of its intention to terminate.
3. To permit a person holding a valid licence for a Class D Station in the Citizens Radio Service in the United States to be authorized to operate that station in Canada, and a person holding a valid licence for a station in the General Radio Service in Canada to be authorized to operate that station in the United States.
4. Mutual co-operation with the United States in providing equal privileges to citizens of both countries.
5. Mutual cooperation.
6. Cost of participation is nil.
7. Allows Canadian citizens to operate their General Radio Service stations while temporarily in the United States.
8. No particular problems.
9. The arrangement should be maintained.
10. No changes recommended.

TELECOMMISSION



Study 3(b)

**Communications and the
Canadian Assistance Program
for Developing Countries**

The Department of Communications

REPORT OF TELECOMMISSION STUDY 3(b)

COMMUNICATIONS AND THE CANADIAN ASSISTANCE PROGRAMME

FOR DEVELOPING COUNTRIES

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Information Canada
Ottawa, 1971

This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

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A/GENERAL

1. Definition of "Communications"

"Communications" from the point of view of Study 3 (b) is concerned basically with electronic and electrical systems for the transmission, reception, storage and retrieval of information. However, it also includes training programmes and educational institutions in applicable disciplines and special software for data banks.

2. Purpose of the Canadian Assistance Programme

The essence of the Canadian Assistance Programme is assumed to be contained in the concept of a "development partnership" put forward in the Pearson Report, "Partners in Development". This partnership is seen as an international development effort aimed at putting the less developed countries, as soon as possible, in a position where they can realize their aspirations with regard to economic progress without relying on foreign aid. It is based upon the promise that it is in the interest of all nations, the strong and the wealthy, as well as the economically weak, to co-operate to secure the fullest possible utilization of the world's resources, human and physical.

3. Military Assistance

The study team will be concerned only with non-military assistance.

4. Proviso

In considering the approaches to assistance it will be recognized that programmes supported through CIDA must meet the criteria and priorities established by both the recipient country and CIDA for the provision and utilization of development assistance.

B/SPECIFIC TERMS OF REFERENCE

1. Discuss the potential contribution that improved communications could make in accelerating progress in developing nations.

2. Describe the organization, scope, history and impact of Canadian assistance programmes with specific reference to those involving communications; include sanitized case histories.

3. Outline ways in which government assistance is or might be provided to support the establishment of subsidiaries of Canadian companies in the developing nations.

4. Discuss the various channels through which Canadian assistance may flow; eg., UN, UN Specialized Agencies, World Bank, Asian Development Bank, Bilateral and Multilateral Agreements, Canadian Government Departments and Crown Corporations, etc.

5. Discuss in detail specific forms which assistance may take, eg.,

- (a) Providing Communications Hardware, - earth stations, switching centres, cable, etc.
- (b) Design and construction of communications systems - microwave relay systems, urban telephone systems, medical radio networks, tropo systems, etc.
- (c) Design and construction of functional information systems - Educational TV, Medical, Legal, Law Enforcement, Scientific and Information Services, Communication Satellite or CAI systems, etc.
- (d) Establishment of regional educational institutes in communications technology and management.
- (e) Providing information services - ranging from local tape and film libraries to regional or international data banks with access equipment in the developing nations.

6. Assess Canadian capabilities with respect to our ability to provide assistance. Include, for example, such factors as availability of suitable manpower, industrial capabilities, private organizations, government organizations, financial resources, etc.

7. Prepare recommendations on institutional arrangements, programmes and policy which can provide guidelines for future activities.

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INTRODUCTION

Although most discussion of communications and the Canadian assistance programme must turn on consideration of defined projects and specific products or areas of Canadian competence, it is important in establishing policy that the effects of communications be seen in the wider context of contemporary social change, of which development planning and development assistance planning are important aspects.

On reflection, it can be concluded that without contemporary communications there would have been no "revolution of rising expectations" and thus no thrust towards development as we understand the concept at the beginning of the second Development Decade. Robert S. McNamara, President of the World Bank, speaking in New York on February 20, 1970, said:

"----Though men have inhabited the same planet for more than a million years, they coexist today in communities that range in the extremes from stone-age simplicity to space-age sophistication.

That degree of inequality would not, perhaps, be as socially and politically explosive as it in fact is, could it remain a well kept secret. For centuries stagnating societies and deprived peoples remained content with their lot because they were unaware that life was really any better elsewhere. Their very remoteness saved them from odious comparisons. But the technological revolution has changed all that. Now, with the transistor radio and the television tube in remote corners of the world dramatizing the disparities in the quality of life, what was tolerable in the past provokes turbulence today.

And what else but turbulence could one expect on a planet linked by instantaneous communication but fragmented by conspicuous inequality...."

Professor E.M. Rogers carries this line of thought a little

further in his study on "Modernization Among Peasants - The Impact of Communication" (Holt, Rinehart and Winston, Inc., 1969), when he describes the 1950's as the decade of rising expectations and the 1960's as the decade of rising frustrations.

"---Why do aspirations outrun actualities in many emerging nations? One reason lies with the use of mass media in less developed countries. As important heralds of the gospel of desires, the mass media have effectively put forth the message of wider horizons. Unfortunately, the mass media have not been equally effective in showing their audiences how to achieve these new goals. For example, it is very likely more difficult to teach villagers how to read by way of radio instruction than it is to make city life appear desirable. Hence the need to utilize the mass media as tools for achieving development actualities (such as literacy) grows more important every day. When mass media audiences are encouraged to want more and not fully informed on how to get more (food production, higher incomes, better education for their children), the net result is frustration, not modernization"

In the time available, and given the present state of knowledge about the inter-relationship between communications and social change in traditional societies, the Study Group has been unable to explore fully the fundamental concepts bearing on our terms of reference. Indeed, it is probably fair to suggest that "the many and complex inter-relationships between cultural change, science and technology and economic development can hardly be said to be understood by expert specialists, much less by interested layment" (Tom Mboya "Impact of Science on Society", Volume XIX No. 4, p. 332). The Study Group has had to concern itself with specific recent or potential projects where some information and experience are available. Even here, we have very little data on long-term broad-spectrum effects. On the other hand, we feel that any recommendations and conclusions should not be considered in isolation from this broader background, which we hope will soon become better understood through the work of the new International Development Research Centre, and other studies in Canada and elsewhere.

Most of the present report necessarily regards international development projects as outlets for Canadian production and Canadian competence. However, seen from the viewpoint of the recipients, assistance in communications represents inputs to programmes directed much less to communications as such than to economic growth which, in turn, implies social and cultural change. The specific project - improvement of the telephone system or establishment of a broadcasting service, for example - is the administrative unit, but it is through the larger development programme that the success or failure of the communications inputs must be measured. In other words, communication systems in the broadest sense allow services to be provided which can be catalysts for development but conversely the lack of good communications may be a limiting factor in the rate of development.

It does not necessarily follow that a project which succeeds dramatically in terms of its own relatively limited and technical objectives will make an equivalent net contribution to the development programme seen as a whole. Indeed, it will not make a maximum contribution if resources devoted to the project have a higher use in other areas, or if the secondary social effects of the project inhibit other aspects of the overall programme. In a different perspective, it is not necessarily true that the project which has the highest utility from a Canadian domestic point of view will necessarily have the same priority in terms of the development needs of the recipient society.

Although we recognize the importance of the questions, the Study Group is unable to advise with any authority on "How much communications should appear in the aid mix? What criteria should be followed in assigning priorities?" We would stress the need for additional research in the relationship between communications and the development process, to revise and perhaps modify what must at this stage be intuitive or rule-of-thumb judgments.

Some points are, of course, fairly clear, if not clearly helpful. One cannot generalize about developing countries and draw conclusions relevant to development assistance policy. It makes no sense at all to bracket India with Jamaica, or even with Pakistan. With differing cultural traditions and economic and social conditions the optimum aid mix will change - whether the "optimum" is seen in terms of abstract theory or of alternatives preferred by governments.

There is nevertheless some evidence that national development planners have tended to neglect the potential of the mass media (and communications generally) or at least to assign them a much lower priority than current thinking in developed countries would indicate. For example, in the 1950s, only .02% of India's national development budget was allocated to radio broadcasting, and only about half this amount was actually spent. In the 1960s, India's development planners cut this broadcasting budget in half (Rogers op cit p. 100).

This is not an exceptional case; it is seldom indeed that communications will be ranked with steel mills, power dams and other conspicuous development indicators. The less-developed Communist nations are an interesting exception to this general statement.

The weight of informed opinion in developed countries appears to hold that the potential benefits offered by improved communications in education, economic development and social integration in developing countries (and others) are very high. If cost-benefit ratios could be calculated, they would often prove very favourable. The Study Group broadly shares this view. Can we then conclude that the proportion of electronic communications in the aid mix is too low? Perhaps it is sometimes, but a great many other considerations (apart from sovereignty and local pressures) must enter into the decision.

Not the least of these is the point, discussed earlier, that electronic communications may be more effective in arousing wants than they are in providing the means of satisfying them. Print may have a relative advantage here, and if so the relative stress that many developing countries accord to literacy and book production may not be misplaced.

There is also the concept of "cultural privacy" which is already receiving some attention and will probably come to carry increasing weight over the next decade. This holds that cultures which may be intrinsically rich and satisfying, but which are relatively weak in contemporary terms, can neither assimilate inexpensive foreign-produced media content, nor afford to produce material of equally commanding audience impact on their own. Under other names, the concept is familiar

to Canadians. In this context, it is not necessarily irrational for a developing country to assign a low priority to electronic communications: in effect, to allow time for change in the traditional culture in order to avoid its collapse.

Generally speaking, it seems clear that intellectual and operating problems involved in assistance through the supply of equipment are easier and cheaper to solve than those concerning the fundamental questions of production of content, the effect of content, and the extent to which content can in practice be modified or improved to secure a desired effect or at least to minimize deleterious effects. Difficult related questions concern institutional structures: Do the models now available represent the optimum for developing countries? How far is it appropriate to use models which have grown up in the very different economic, social and cultural traditions of the present rich countries? How far are these models implied by the conventional application of readily available technology?

The Honourable Tom Mboya raised this question in the last article he wrote (op cit), when he referred to institutions:

"which are often imported without modification from the developed countries. The financial institutions or the manufacturers who come to set up business in Africa always come unprepared to make any form of adjustment and modification; instead, they expect Africa to adjust as a condition of their participation in the development that should take place."

Leaving aside the temptation to read "Canada" for "Africa" in the foregoing, it is fair to ask whether Mr. Mboya's criticism may not be as valid for the communications sector of development (and especially for the programming sector of communications) as it is for the manufacturing and financial institutions to which he specifically refers.

So far, the foregoing has raised more questions than it has offered answers. We conclude with the suggestion that Canada is probably better fitted than any other country to help find the answers. Apart from the obvious advantages of technological and methodological sophistication, relatively well-developed scholarship, and a reputation for political

objectivity and sympathetic concern, we offer the tremendous advantage of lead-time.

It seems clear that the implications of present technology and the applications of new technology will be worked out first in the wealthy and scientifically sophisticated countries. Most of the new developments in both hardware and software, and most of the editorial content, will continue to be produced in the very large nations and will be quickly reflected in Canadian experience. How we respond thus offers models for developing countries, if not to follow then at least to examine and to reflect upon. Current concern over "Canadian content" is a case in point.

Some Canadian discoveries may be very useful, with or without modification. One notable "invention" was the farm radio forum technique which was developed here in the early forties and endured until the late fifties when it outlived its usefulness, or at least its audience. It is significant that this technique is now being used in India (where in 1965 there were some 12,000 forums attended by nearly 1/4 of a million villagers) in Pakistan, Mali, Nigeria, Ghana, Madagascar, Jordan and elsewhere. Research indicates, incidentally, that this technique may tend to combine in an optimum way the economy and modernizing effects of mass media communication with the stronger influence on attitude change which is characteristic of inter-personal communication. It may well be that current Canadian experiments with film and video-tape production (as distinct from presentation) in community development will come to be regarded as an equally significant contribution.

As an unintended by-product of its main purpose, the Telecommission itself is likely to prove an important Canadian contribution to development planning in many other countries. Many of the studies of influences bearing on Canada and much of the consideration of appropriate Canadian initiative and response will certainly be of great significance and interest elsewhere. As indicated earlier, other countries may well decide not to follow our models; the significant point is that the models will have been defined and analysed, and will accordingly offer very important examples and insights for decision makers in developing countries who will shortly face similar kinds of choice in policy and operations.

The international community is looking hard at the lessons that have been learned in the last decades in which assistance to the less developed nations has become an important aspect of international life. Important decisions must be taken about the future course of the international development effort in light of the present priorities of donor countries and the changing needs and attitudes of less developed nations (Hon. Mitchell Sharp).

An important contribution to this review is the report of the International Commission of the World Bank headed by the Rt. Honourable Lester B. Pearson - the report appeared in a book entitled "Partners in Development". Further, the Government has tabled a paper on international development as part of the overall review of our foreign policy. The United Nations Development System is presently under study and among many reports and plans which have been submitted is the Jackson Report - "The Capacity of the United Nations Development System". It is a comprehensive report on the problems of international development and recommendations are made regarding an appropriate re-organization of the UNDP. The Jackson and Pearson Reports, and studies on the second development decade are regarded as complementary documents. In the US, the Peterson Report was released recently and it calls for radical changes in the foreign assistance policies of the United States, and urges that past concepts of massive comprehensive bilateral aid be abandoned and the U.S. Agency for International Development be dissolved - not because they have failed but because world conditions have changed. The report further suggests that "a growing part of U.S. assistance should be provided through multilateral, international agencies so it will be free of foreign policy entanglements." The Peterson report has not, as yet, become official policy. Another example of possibly the changing approach to assistance and the supporting institutions is the emergence of a number of multilateral regional banks, with concomitant economic groupings.

In summary, it is clear that there is a relationship between communications and social and cultural change, but the precise nature of the relationship in defined economic and cultural contexts correlated against programme content in specific media is very imperfectly understood. Canadian experience as focused through the Telecommission and in other ways is likely to be highly relevant. Assistance projects must obviously proceed despite the gaps in our understanding, for the perfect must not become the enemy of the good, but we should be prepared progressively to modify assistance policy with increasing understanding over time.

SECTION II

CANADA'S PAST AND PRESENT ACTIVITIES

2.A. Canadian International Development Agency (CIDA)

CIDA's allocations rose from \$288.6 million in 1968-69 to \$338.1 million in 1969-70. Of the latter amount \$269.7 million was for bilateral assistance and \$68.4 million was provided through multilateral agencies such as the United Nations and the World Bank Group.

Canada continued the policy of bilateral aid to certain countries of concentration. The major recipients are: India, Pakistan, Ceylon and Malaysia; Nigeria and Ghana (in Commonwealth Africa); Tunisia, Cameroon and Senegal (in Francophone Africa); and the Commonwealth Caribbean. Countries receiving bilateral Canada aid are shown on pages 9 and 10. The countries are grouped by regions and a distinction is made between those countries of concentration or of special mention and those which are receiving Canadian aid at some level.

During 1969, there were about 2000 students and trainees from less developed countries studying in Canada under CIDA auspices. However, CIDA is giving increasing attention to projects which provide education and training in the developing country itself. About 700 Canadian teachers are working overseas through CIDA programmes and under the technical assistance programme. CIDA now has 250 experts abroad carrying out a variety of professional and technical jobs.

Telecommunications is one of many fields of economic activity that CIDA recognizes as important to development growth. The Canadian assistance programme is significantly involved in telecommunications, including the latest technology such as satellite communication earth stations. Such programmes can be an excellent investment for developing countries through increasing the quality, speed and dependability not only of their international communications but, in some cases, are essential to the improvement of their domestic communications system, eg., CIDA's recent loan to Pakistan for two satellite earth stations to link East and West Pakistan.

CIDA's bilateral disbursements on telecommunication projects have been increasing both in aggregate and relative to the other economic sectors receiving Canadian bilateral aid. The following table 1, page 11, indicates this growth. No detailed annual breakdown of expenditures on telecommunication projects from 1951 to 1967 is readily available:

COUNTRIES RECEIVING BI-LATERAL CANADIAN AID

(Source - OECD)

COUNTRIES OF CONCENTRATION
OR OF SPECIAL MENTION

RECEIVING AID

EUROPE:

Nil

EUROPE:

Turkey *

AFRICA:

AFRICA:

COMMONWEALTH COUNTRIES:

COMMONWEALTH COUNTRIES:

Ghana
Kenya *
Nigeria *
Tanzania *
Uganda *

Botswana
Lesotho
Malawi
Sierra Leone
Swaziland
Zambia *

FRANCOPHONE COUNTRIES:-

FRANCOPHONE COUNTRIES:-

Algeria *
Cameroon *
Congo (Kinshasa) *
Morocco *
Niger
Senegal

Tunisia *

Burundi
Central African Republic
Chad
Congo (Brazzaville)
Dahomey
Gabon
Ivory Coast *
Madagascar Malagasy
Mali
Mauritania
Togo
Upper Volta

OTHERS:-

OTHERS:

East African Community
Rwanda

Ethiopia *

AMERICA: NORTH AND CENTRAL

AMERICA: NORTH AND CENTRAL

Barbados
Honduras (Br.)
Jamaica *
Trinidad and Tobago *
West Indies (Br.) (N.I.E.)

Nil

AMERICA: SOUTH

AMERICA: SOUTH

Guyana

Nil

COUNTRIES RECEIVING BI-LATERAL CANADIAN AID - con't.

ASIA: MIDDLE EAST

Nil

ASIA: SOUTH

Ceylon *
India *
Pakistan *

ASIA: FAR EAST

Cambodia
Laos
Malaysia *
Thailand *
Vietnam (South) *

OCEANIA:

Nil

ASIA: MIDDLE EAST

Nil

ASIA: SOUTH

Afghanistan
Burma
Maldiv Islands
Nepal

ASIA: FAR EAST

Hong Kong
Indonesia *
Korea (South) *
Philippines *
Singapore *

OCEANIA:

Nil

* Member of INTELSAT

NOTE 1: Of the 28 Countries for concentrated aid, 17 are members of INTELSAT.

NOTE 2: Of the 30 other Countries receiving Canadian aid, 8 are members of INTELSAT.

NOTE 3: A total of 34 of the 52 LDC's of Africa are receiving Canadian aid at some level.

TABLE I

TELECOMMUNICATIONS
BILATERAL DISBURSEMENTS BY CIDA

	Total Disbursements in \$1000	Percentage of Total Bilateral Programme
1951-67	\$ 3,793.1	0.5%
1967-68	1,572.1	1.1%
1968-69	5,015.7	3.3%

It is anticipated that the 1969-70 figure will be approximately the same as that for 1968-69. It is to be noted that the percentage for telecommunications assistance has increased and this increase parallels that of other aid sources such as the World Bank Group and is relatively of the same magnitude. The Canadian increase over the past few years could, be due to some relaxation in the "Canadian content" (requirement that assistance loans be used in part to purchase Canadian equipments and services), but nevertheless, there is a growing recognition in both recipient and donor countries of the interdependence of reliable domestic and international communications and the full exploitation of the assistance provided for other basic areas of economic development. To respond to this growing emphasis on communications, CIDA has increased staffing for this purpose.

Table II gives a breakdown of CIDA's bilateral disbursements for 1968-69 by economic activity and geographic groupings. It should be noted that communications allocations are exceeded in a major way by Commodities, Food, Transportation, and Technical Assistance.

The following is a brief summary of past and present CIDA involvement in telecommunications projects. Telecommunications equipment has been provided as an integral part of many projects in which it is not easily separable from the overall project for purposes of this review. An example would be the construction by CIDA of the Katunayake Airport in Ceylon. In some of these projects the telecommunications equipment is not necessarily Canadian since the overall Canadian content of the project is high enough to permit foreign purchase. An example would be the Swiss made (Brown-Bouveri) communication equipment purchased for the Hyderabad-Karachi transmission line in Pakistan. The summary does not include any mention of projects which may have been considered but rejected by CIDA. Thus, the following summary includes only telecommunications projects which are identifiable as such and which have been or are being implemented by CIDA.

Bilateral Disbursements 1968-69

by Field of Economic Activity

(\$ Thousands)

	Agriculture and Rural Develop- ment	Com- modities	Edu- cation	Energy	Food	Health and Social Services	Industrial Plants	Natural Re- sources	Commu- nications	Trans- porta- tion	Public Utilities	Cash Contri- butions	Techni- cal As- sistance	Total
Colombo Plan	476.1	26,474.0	782.5	5,192.0	48,765.4	2,267.2	352.6	233.7	2,252.8	5,826.3	3,898.3	1,729.1	5,328.8	103,578.9
Commonwealth Caribbean	423.8	—	1,197.6	—	100.0	124.3	116.8	1,409.4	513.1	739.1	918.7	48.1	3,509.3	9,100.2
Commonwealth Africa	16.8	—	69.1	—	4,227.1	128.5	279.5	190.1	1,728.9	2.3	366.9	50.5	8,347.8	15,407.4
Francophone Africa	—	891.7	512.8	—	6,032.1	16.6	—	—	—	67.1	159.9	46.2	6,704.8	14,431.3
Other Programs	—	—	29.0	—	—	21.8	—	—	423.1	.4	—	5,950.5	1,195.4	7,620.2
Latin America	—	—	54.7	—	—	—	—	559.4	97.8	2,565.8	40.0	—	—	3,317.7
Total Disbursements	916.8	27,365.7	2,645.7	5,192.0	59,124.6	2,558.4	748.9	2,392.6	5,015.7	9,201.1	5,383.8	7,824.3	25,086.2	153,455.7

The Bilateral Programme

a) Asia -At the present time the major Canadian telecommunications project in Asia consists of a development loan for \$40,000,000 in support of a \$600,000,000 telecommunications development programme in India. Under the programme, major Indian cities are to be joined by high capacity co-axial cable and microwave systems increasing the capacity of existing urban and rural telephone networks and generally improving efficiency and service. Canada will supply approximately \$15,000,000-worth of microwave equipment and \$23,000,000 worth of cable as well as some technical assistance support.

Canada is presently undertaking to build three earth satellite stations, two in Pakistan and one in India under contracts with RCA Company of Montreal. The Pakistan stations, one each in East and West Pakistan, will be used to send television, radio and telephone communications between the two parts of this country. These stations will be interconnected through an INTELSAT satellite to provide also a significant improvement in their international communication links. The total loan to Pakistan is for \$10,500,000 and includes, in addition, to the satellite stations, major improvements to other communication facilities, and training. A similar project in India costing \$4,000,000 will supply an earth satellite station at Poona, east of Bombay. The station whose total cost will be \$7,000,000 will tie India to the global satellite system providing high quality multi-circuit telecommunications with Europe.

Canada is now supplying telephone cable through development loans to both India and Pakistan. The National Standard Company of Guelph is manufacturing \$900,000 worth of cable over the next three years for Pakistan, and the General Electric Company of Canada is now finishing a project which consisted of \$353,000 worth of telephone cable of various sizes for India.

Past telecommunications projects in Asia were not as large as the ones now being undertaken. The largest was only peripherally a telecommunications project in that no equipment was supplied; this consisted of \$490,000 for the provision of architectural engineering and other technical services to design and supervise development of television facilities at Kuala Lumpur for the Government of Malaysia. Malaysia has also been given fifty two-way semi-portable radio sets purchased from the Canadian Marconi Company for \$150,000. These sets were for the use of the Aborigine Medical Service.

In India in 1963, Canada supplied and installed four dual diversity receivers and four transmitters in a \$250,000 project for the Indian Meteorological Service. This project was necessary to fill an Indian commitment to maintain the Moscow-Delhi-Tokyo link in the Northern Hemisphere Meteorological Communication System. Canada has just recently finished a project involving \$56,000 worth of microwave training school equipment for the Pakistan Telegraph and Telephone Microwave Training Department.

b) Commonwealth Africa The major CIDA involvement in telecommunications projects in Commonwealth Africa has been in Nigeria. In 1965 an initial development loan for \$3,500,000 was made to Nigeria to purchase telephone cable from Phillips Cable Limited of Brockville. This project was part of the second phase of the development of telecommunications in Nigeria and the Canadian project was done in co-operation with two British firms that supplied \$10,500,000 of telephone equipment. Canada is now more heavily involved in the third phase of Nigeria's telecommunications programme. In 1967 a \$1,600,000 loan was allocated to provide through the Northern Electric Company of Canada, a 7,000 line telephone exchange in Lagos. In 1968, the project was increased by \$8,000,000 to provide telephone exchanges in eight additional locations plus 3,000 more lines for the Lagos exchange. The loans for the third phase also pay for a technical training and maintenance programme for the switching systems.

Two other telecommunications projects are presently underway in Commonwealth Africa. Technical Material Corporation is supplying electronic equipment for five communications stations for the Kenyan national police force. This grant aid project costs \$200,000 and also involves technical assistance to install the equipment and train the operators. In Lesotho, an \$85,000 project consisting of a simple telephone exchange for the University of Botswana, Lesotho and Swaziland is now being implemented. \$33,000 worth of Canadian telephone cable is to be installed by the local telephone company and once in place, a PABX system for 200 telephone lines is to be added by Canada.

In 1966, Canada agreed to a project to provide approximately \$115,000 worth of equipment and engineering services necessary for ground-to-air communications facilities for the Blantyre Flight Information Centre in

Malawi. The two other past telecommunications projects in East Africa were done for the former East African Common Services Organization. In 1965, a \$38,000 radio transmitter was given to the East African Meteorological Department in Nairobi. \$92,000 worth of aviation electronics equipment, consisting mainly of 9 T.M.C. transmitters for the use of the Civil Aviation Authorities have also been given to East Africa.

c) Commonwealth Caribbean CIDA has not carried out large telecommunications projects in the Commonwealth Caribbean comparable to the projects in India and Nigeria. The largest telecommunications project supported by CIDA in this area provided a radio telephone system for Jamaica. The \$770,000 development loan purchased VHF and HF equipment for 65 fixed base and 66 mobile receiving and transmitting stations to link government departments on all parts of the island and central headquarters. A 1968 extension of this project included the Jamaican Railway Corporation.

Two smaller projects have consisted of providing aviation electronics equipment. In a project undertaken in 1963, Canada supplied the necessary equipment for a V.O.R. (V.H.F. Omni Range) instrument landing system at Piarco Airfield, Trinidad. The total cost of the project including installation and shipping was about \$134,000. Canada has recently allotted a grant of \$165,000 to Guyana to purchase and install point-to-point communications equipment for Guyana Airways Corporation. This project is now being implemented.

d) Francophone Africa There have been no telecommunications projects undertaken by CIDA in Francophone Africa, although possibilities are being pursued for satellite communication earth stations.

e) Latin America Through the Inter-American Development Bank, CIDA is now participating in a \$16,300,000 telecommunications project in Chile to improve the long-distance communications within the country. CIDA is providing a development loan of \$4,230,000 for the extension of a microwave system, provision of H.F. and V.H.F. radio and radio telephone networks and supply of toll switching equipment. In addition, Canada will train four technicians in Canada and provide other technical assistance.

f) Other Programmes CIDA is contributing \$4,000,000 in grant aid to a \$25,000,000 telecommunications project in Turkey won under international competition by the Northern Electric Company of Canada. At the time the debt servicing capacity of Turkey had been exhausted to the extent

that the Turkish authorities and the Consortium of which Canada is a member were requiring financing at an interest rate of 3% and amortization over 15 years. To meet these requirements, a grant was made by CIDA that reduced the effective interest rate of the total Canadian package. The project consists of supplying telephone equipment to the Turkish Posts Telegraphs and Telephone Administration.

The Multilateral Programme

Canadian telecommunications equipment manufacturers have supplied equipment and technical expertise to aid projects under the auspices of the World Bank, International Development Association (IDA), the United Nations, and the Organization for Economic Cooperation and Development (OECD). These organizations require international bidding on the tenders for their aid projects; no list of successful Canadian bidding on such tenders is readily available. The following multilateral aid organizations are summarized in Appendix A.

- The World Bank; IDA
- United Nations, ITU, UNESCO
- Asian Development Bank
- Interamerican Development Bank
- Caribbean Development Bank

The Private Sector

In addition to official aid activities, CIDA also assist Canadian non-governmental agencies to strengthen and increase their participation in international development. In 1968-9, grants totalling almost \$4 million were made to more than 50 agencies. Grants to non-governmental agencies are based on a "matching" principle. The voluntary agency supplies one-half to two-thirds of the funds required. The largest grants have been to the Canadian University Services Overseas (CUSO), and the Canadian Executives Services Overseas (CESO).

CUSO's involvement in the provision of personnel for work in telecommunications has been very limited. At present there is one volunteer working on external telecommunications for the East African Post and Telecommunication System.

The remainder of CUSO's communications activities are in educational radio and television. In Nigeria, CUSO currently provides a producer/director for work in the English Language Schools Broadcast Division of Kaduna Television. In Peru, a CUSO engineer maintains equipment for the Adult Education Radio School operated by the Franciscan Missions.

Telecommunications are really outside the area of maximum CUSO concentration, which tends to be related to education. While CUSO remain sufficiently flexible to respond to the requirements of developing countries as they become evident, they do not anticipate, at this time, that they will be supplying personnel for employment in telecommunications to a greater extent than is currently the case.

CESO is a non-profit organization which recruits senior and usually retired executives, middle management, and technical and professional men to serve without salary for up to six months in developing countries. Their job is to hand on valuable financial or operating knowhow. There is no loss to Canada and a net gain to the countries involved.

There are now more than 800 volunteers on the roster with a broad range of skills. CESO provides fares for the volunteer and his wife, the host country their board, lodging, and incidental expenses. CESO commitments are underwritten by the CIDA.

So far, CESO has handled 280 requests, 90 of which were withdrawn before CESO could place a man in the field. Of the 190 projects, the remaining 78 have been completed, 47 are open pending location of suitable candidates, while volunteers now in the field or awaiting acceptance for projects, total 65. About 18% of the projects are in South America, 42% in the Caribbean and the rest in Asia, India and the Middle East.

Assignments have averaged 3.7 months each. CESO also cooperates with the UN Technical Assistance Recruitment service in searching its own roster for suitable candidates. There is a large fund of goodwill being built up for Canada by CESO efforts abroad, and often other organizations can follow up CESO efforts with further support. At the time of contacting CESO in February 1970, there were no commitments for executives in the communications field.

2.B. Canadian Broadcasting Corporation

The Canadian Broadcasting Corporation has a long tradition of cooperation with foreign broadcasters. In 1938, only two years after the CBC succeeded the Canadian Radio Broadcasting Commission, a CBC radio producer was seconded to the Australian Broadcasting Commission to produce drama and special features. Since then, the CBC has seconded its personnel to international organizations and foreign broadcasters, and has responded to requests from both international agencies and foreign broadcasters to provide training and practical attachments to overseas trainees.

The first responsibility of the CBC is the discharge of its responsibilities as laid down in the Broadcasting Act. Its involvement abroad is geared to the implementation of its mandate and the Corporation has no special fund to assist foreign broadcasters. Except in special cases, such assistance as is provided by the Corporation is given through the Canadian International Development Agency, UNESCO, and other international organizations, who assume all direct costs to the Corporation of such assistance.

The Corporation operates a National Training Centre at Engineering Headquarters in Montreal. Formal technical courses are offered throughout the year. The programme and the design of these courses are geared to the needs of the Corporation and directed to its own personnel. Overseas technical trainees are registered in the appropriate courses given during their stay with the Corporation, and practical attachments are arranged for the balance of their training period.

In other areas, such as production, stage design, and news, training within the Corporation is in-service, on-the-job training. Since these courses are for CBC personnel, they are offered in a series of seminars which are given irregularly according to the availability of staff who are free to attend.

Because of the peculiarities of training facilities within the CBC, each request for training from a developing country is treated on an individual basis and the response is the result of a cross-Corporation

canvass. The training programme is established for each trainee according to his own requirements.

In addition, the CBC accepts every summer, on attachment, a number of overseas students sponsored by CIDA who are studying in Canadian universities and colleges in fields related to broadcasting.

During the ten-year period from November, 1959, to November, 1969, the CBC provided a total of approximately 807 training-months to 190 trainees from 31 developing countries.

At the request of CIDA or international agencies, the CBC may release members of its staff for special projects. The CBC has been called upon to provide specialists to make feasibility studies, to act as advisors on a long or short-term basis, and to act as instructors. Here again, except in special cases, all direct costs are borne by the requesting agency. In this connection, the CBC has been involved in several major projects abroad, the most important of which were the introduction of television services in Ghana and Malaysia.

In Ghana, the recommendations of a feasibility study for the introduction of a television service conducted by two CBC specialists were approved by the Ghanaian government. A Canadian engineering consulting firm went to Accra to produce designs and tender specifications for a TV studio centre and a supporting network of microwave links and appropriate transmitters. In the Autumn of 1961, by arrangement with the then External Aid Office, a senior CBC technician and a producer went to Ghana and, with two senior Ghanaian technicians, began setting studio-classroom facilities. At the beginning of 1963, the first classes began with ten production trainees, a dozen technicians, a film student and a young artist.

In June 1963, the first 22 Ghanaian trainees in all fields of broadcasting came to Canada for a year. An equally large contingent replaced them in 1964 for basic training at CBC facilities. During this period it became necessary to increase the staff of the Accra training school and three more CBC staff members, a producer, a television news editor, and a film camera man-editor, went to Ghana.

Early in 1964, film training started and, after five months of classes and exercises in Accra, the first six film trainees went to CBC Halifax

and Winnipeg production centres. The second group of six, having spent a year in Canada, replaced their colleagues in the Accra training programme.

As a result of this approach, Ghana TV went on air in the summer of 1965 with a fully-manned station providing a domestic programme schedule from the very beginning, ranging from news, sports and special events programmes, to some variety and light entertainment programming.

Again, in Malaysia, following a Malaysian government decision to introduce television, two CBC advisors (one in engineering, the other in administration/programming) went to Malaysia in 1962 under the Colombo Plan to conduct the feasibility study and submit recommendations to the Malaysian government.

In 1963, the administration/programming advisor returned to Malaysia on a long-term basis and was joined the following year by three more CBC advisors. As in Ghana, a Canadian engineering consultant firm was appointed under the Colombo Plan to provide the plant design and tender specifications.

At the same time, Malaysian technicians, engineers and producers were being trained in Canada and Malaysia. The pilot television services began in December 1963 and by mid-1964 the permanent service of "Talivishen Malaysia" began. Before returning home, the principal CBC advisor presented the Malaysia government with a plan for broadcasting organization development and a long-range projection for the expansion of the television service.

During the period of November, 1959, to November, 1969, 27 CBC advisors were seconded to 10 developing countries of Africa, Asia and the Caribbean for a total of 246 man-months. In most instances, these secondments are arranged and financed by CIDA or UN agencies. These assignments ranged from a feasibility study of a merger between Sierra Leone Radio and Sierra Leone Television, to a detailed study of the improvement and development of broadcasting technical facilities in Nigeria. In the summer of 1970, a CBC technical instructor was assigned to a regional course for radio studio operators organized by the Commonwealth Broadcasting Secretariat.

The following table gives an overview of the activities of the CBC's assistance to foreign broadcasters during the past ten years:

	<u>Trainees</u>	<u>Total months of Training</u>	<u>Secondments</u>	<u>Total mont</u>
Algeria	15	30		
Antigua	1	4		
Barbados	2	3-1/2		
Camerouns	6	25	2	36
Ceylon	1	1/2		
China	5	3		
Congo (Brazzaville)	2	5-1/2	1	4
Congo (Kinshasa)	3	19-1/2		
Ghana	47	310	9	113
Guyana	3	6		
India	4	6-1/2		
Indonesia	11	28		
Israel (x)			2	13
Jamaica	4	11-1/2	2	5
Kenya	11	26	1	1
Korea	3	28		
Malagasy Republic			1	3
Malaysia	40	129	6	94
Morocco			1	1
Nigeria	3	9	1	1-1/2
Pakistan	8	32		
St. Kitts-Nevis- Anguilla	3	11-1/2		
Sarawak	2	3		
Senegal	1	5		
Sierra Leone	1	9	1	1/2
Singapore	1	4		
Tanzania	1	6		
Togo	1	3		
Trinidad & Tobago	2	4 1/2		
Tunisia	3	31		
Turkey	2	1		
Uganda	4	52		
TOTAL	190	807	29	259

2.C. Export Development Corporation (EDC)

There is an important relationship between the financing provided by CIDA for development assistance and the funds provided through the Export Development Corporation (EDC) (formerly Export Credits Insurance Corporation) to finance and provide Credits Insurance for Canadian exports. Although the purpose of EDC is to promote Canadian exports, the amounts provided to less developed countries are included in the international accounting of aid flows published by the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD). Funds allocated under the development assistance programme are intended to help in the development of the recipient country, but because bilateral assistance is partly tied to Canadian goods and services it is a significant additional source of financing for Canadian exports.

A new investment insurance facility is being provided by the Export Development Corporation. Investment Insurance will protect Canadian investments in less developed countries against such non-commercial or political risks as war, insurrection or revolution, expropriation or confiscation, and prohibitions against the repatriation of earnings or capital. Insurance will be provided only in countries where an understanding has been reached between the governments of Canada and the host country concerning the general treatment to be accorded to the investments and claims under the insurance.

Individual investments will be approved for insurance only if they are judged to result in commercial and industrial advantages to Canada and provided they will complement Canada's development assistance objectives.

Loans are made by EDC on a commercial basis at conventional interest rates, ie., hard loans. In this respect, EDC is only somewhat analogous to the World Bank and the International Finance Corporation but is fully comparable to the US Export-Import Bank.

The purpose of long-term export financing and Credits Insurance is to give encouragement and assistance to Canadian exporters of capital equipment who develop business possibilities abroad. Through these facilities, exporters who can meet international competition in terms of price, quality, and deliveries are afforded the opportunity of competing in terms of credit as well.

This kind of financing is a useful form of capital assistance for economic development in recipient countries, but is not intended as an instrument of Canadian foreign aid but nevertheless, is complementary to it. Accordingly, while the terms of credit match international financing terms for viable projects, they are not intended to match aid-type financing facilities.

As an example of a multination financing agreement which places the onus on a supplier to be internationally competitive, is the "Agreement on Maximum Terms of Payment for Ground Satellite Communication Stations", which follows:

(REVISED TEXT - OCTOBER, 1967)

- (1) The parties to this Agreement are the following Government Departments and Agencies:-

CANADA	Department of Trade and Commerce
FRANCE	Ministry of Economy and Finance
FEDERAL GERMAN REPUBLIC -	Federal Ministry of Economy
ITALY	Ministry of Foreign Trade
JAPAN	Ministry of International Trade & Industry
NETHERLANDS	Ministry of Finance
SWEDEN	Ministry of Commerce
SWITZERLAND	Department of Commerce
UNITED KINGDOM	Export Credits Guarantee Department
U.S.A.	Export-Import Bank of Washington.

- (2) The Agreement shall apply to all sales of Satellite Ground Communication Stations except those current cases already specified by parties to the Agreement as being excluded because negotiations on longer terms were already too far advanced. The only such current cases concern sales in Mexico, Argentina, Chile and India.
- (3) Maximum terms of payment shall be eight years from commissioning of each station but the final payment may in no event be later than ten years from the date of the purchase contract. At least 10 per cent shall be payable by completion of delivery and the balance shall be by regular and equal instalments.

- (4) It is clearly understood that aid must not be used to circumvent the agreement and that the above limitations shall apply to all forms of official support and finance including aid. However, if, for exceptional reasons, any party to the Agreement wishes to concede more favourable terms in a particular case for aid reasons, he may do so but only provided that adequate notice of his decision is given to all other parties to the Agreement.
- (5) Similarly, any party to the Agreement may offer more favourable terms in a particular case to match terms offered with official support by any country which is not a party to the Agreement, provided that adequate notice of his decision is given to all other parties to the Agreement.
- (6) For the exceptional cases referred to at paragraphs (4) and (5) above adequate notice shall be interpreted as requiring that notification of the decision to support terms more favourable in any way than those of the Agreement must be made to all other parties to the Agreement in time for them to be able to compete effectively on those terms, i.e., before any contract has been signed or, in cases where tenders are invited, at least 7 days before the closing date for tenders. All parties to the Agreement must be given the opportunity to match credit terms offered by any member exceeding those set out at (3) above. Support (including the provision of aid) will be refused for any contract signed on more favourable terms before other parties to the Agreement have been given such advance notice.

Since 1961, the Export Development Corporation have financed in the Telecommunication sector, a large number of loans for developing countries. In dollar value the total of the loans is exceeded only by the loans in two other sectors, Nuclear Power and Railways (locomotives and rails).

The total of the loans for telephone equipment is \$91.7 million. These loans were for Dominican Republic, Greece, Israel, Jamaica, Philippines, and Turkey. Loans for microwave equipments and systems totalling \$16.6 million

were for Colombia, Liberia, Mexico, the United Arab Republic and Korea. A further loan for \$.48 million was for satellite earth station equipment in Brazil. The foregoing total \$108.8 M up to 31 May, 1970.

2.D International Development Research Centre (IDRC)

The IDRC was established by Act of Parliament in May 1970 to "initiate, encourage, support and conduct research into the problems of the developing regions of the world". World-wide "development research" constitutes less than half of one percent of the aid budgets of donor countries at present. The Secretary of State for External Affairs announced in the House of Commons that the Government would provide a minimum of \$30 million over the first five years for the administration and programmes of the IDRC. After this initial period, governmental support is expected to be related to the level of the Canadian aid programme and may amount to as much as 5 percent of Canadian aid funds or about \$25 million by 1975.

The policies of the IDRC will be vested in an international Board of Governors who will hold their inaugural meeting in October 1970. The Centre's work will be oriented toward the solution of scientific and technological problems confronting rural peoples in the underdeveloped regions of the world. The research projects financed by the Centre will be carried out in a variety of countries. It is possible that as part of the Centre's total programme, some attention may be directed toward the development of an information system concerned with the field of development research around the world.

2.E. National Film Board (NFB)

The National Film Board has provided pictorial information service in the form of motion picture films, filmstrips, slides, photographs and related materials as a regular part of its legislative mandate. To meet the growing demand the Board operates distribution offices in London, Paris, New York, New Delhi, Buenos Aires and Tokyo. In addition libraries are maintained in External Affairs posts throughout the world. Over fifty language versions of many Canadian films are available to meet an audience which approaches one hundred million persons per year.

As one of the few organizations in the democratic world which operates a complete film communication service including all phases of production and distribution it is natural that the Board would represent an appealing model to the developing nations for their information services. Possibly an even stronger reason is the unique editorial freedom enjoyed by the Film Board in planning its programmes.

As a result of these factors, the Board has become an international film reference centre for many countries. Typical projects have included:

- (a) Training foreign film-makers in Canada and abroad.
- (b) Consultation and feasibility studies on organization, administration, technical plants, distribution, etc., in Africa, Ceylon, India, Malaysia, Mexico and South America.
- (c) Provision of special equipment, for example, Cinema Vans, built in Canada and delivered to various African countries.

Based on this background, certain general observations can be made:

- (a) Aid to a developing nation in the field of communication must be planned as a total system which includes hardware, software and adequate training of personnel to programme the facilities independently. The quantities of oversold hardware presently unused in our domestic school system should constitute a fair warning not to repeat that error on an international scale.

- (b) The major part of training programmes should be carried out within the country concerned so that information support programmes may be directly related to local needs with the active participation of the people involved.
- (c) Communication programmes should be planned on a systematic basis (preferably as a result of serious research studies as recommended by Erskine Childers), instead of the present ad hoc procedure which provides no continuity or feedback for those who must plan hardware and software components.

2.F. Department of Communications (DOC)

Personnel in the Department of Communications continue to participate in consulting services in a number of ways. Expert advice is provided to Canadian International Development Agency (CIDA) on proposed telecommunication projects in other countries which CIDA have been requested to support through assistance loans. In this regard, DOC were intimately involved in the assessment of satellite communication earth terminals for Pakistan, and this subsequently lead to CIDA's support for two earth terminals to be supplied and installed by Canadian industry. In addition, CIDA placed heavy reliance on DOC in formulating and preparing specifications for a major improvement and expansion to the microwave communication system in India. This pattern of expert assistance to CIDA was repeated regarding the construction of an extension to the microwave system in Chile, and again with respect to the expansion of the telecommunication maintenance and training facilities in Nigeria.

DOC is often requested by CIDA to evaluate personnel applying for international positions in the field of telecommunications either with the International Telecommunications Union (ITU) or in connection with technical missions and projects within the United Nations Development Programme (UNDP).

The UNDP has made specific requests for technical advice from DOC personnel. Such requests are coordinated with the Department of External Affairs (EA) and CIDA. For example, a DOC expert was provided to lead a group of technical experts in the evaluation of the satellite earth station at Amedabad, India, as a training centre for technicians from other developing countries. The same expert was requested by the UNDP to represent it at the Paris UNESCO Conference on Space Communications which was held in December 1969.

Occasionally, DOC advice is sought by the ITU. In January 1970, Canada, one of five countries, was requested to provide an expert on satellite communications, to evaluate earth station designs which could economically meet the requirements of developing countries. It should be noted that Canadian engineers are often consulted during the course of the many ITU sponsored meetings by engineers from developing countries. Frequent consultations also take place with other government departments such as External Affairs, Ministry of Transport, Industry Trade and Commerce, and National Defence, on a wide variety of questions and projects involving telecommunications.

2.G. Industry Questionnaire

In order to obtain an estimate of the direct contribution which the Canadian Telecommunication Industry has made in the area of technical training to developing countries, a questionnaire was prepared, see page 30. This question was sent to 64 companies. Of this total, there were 37 replies, 24 of which showed Nil activities, leaving 13 with some relevant information. Northern Electric, Bell Canada, RCA., T.M.C., and IBM have contributed the bulk of the training.

The total value of the training provided by these companies amounted to about \$1.3M over the last five years and involved some 30 countries. Some of the training was given free of charge by companies in some instances. In most other cases the training was provided as part of the cost of a contract.

A large part of the telecommunication industry in Canada is affiliated with foreign owned companies. It is apparent that this subsidiary role of our industry is a significant factor in its lack of participation in assistance activities and in the area of technical training. Two comments made in the questionnaire could support this conclusion. Although appearing only once in the responses they were "not involved due, in part, to the license arrangements the Company had until February of 1969 which restricted the Company activities in Canada", and "As (our Headquarters) has manufacturing facilities in many of the developing countries, the technical assistance tends to be given directly by our Headquarters".

QUESTIONNAIRE: TECHNICAL ASSISTANCE TO DEVELOPING COUNTRIES

Name of Donor Company or Organization _____

Country to which technical assistance has been given _____

ITEM	DESCRIPTION	TRAINING IN	TRAINING IN	REMARKS
		CANADA	RECIPIENT COUNTRY	
1.	Total number of foreign personnel trained			
2.	Total man years of training received.			
3.	Approx. costs.			
	3.1 Instruction			
	3.2 Training material (books, tools, equipment, etc.)			
	3.3. Subsistence for trainees			
	3.4 Transportation " "			
	3.5 Subsistence for instructors			
	3.6 Transportation " "			
	3.7 Other (define)			
	TOTAL			
4.	Source of funds			
	4.1 Canadian Gov't			
	4.2 Donor's expense			
	4.3 Recipient Country			
	4.4 U.N. or other programme			
	4.5 Part of commercial contract			
	4.6 Other (define)			
	TOTAL			
5.	List of any other assistance given e.g. equipment, training material, setting up of technical schools etc. indicating source of funds as per Item 4.1 to 4.7			

Attach separate sheets, if necessary.

SECTION III

THE ROLE OF TELECOMMUNICATIONS IN DEVELOPMENT

General Considerations

The introduction of this report does, in fact, contain an assessment of the potential role of telecommunications in developing countries. Caution is expressed with respect to the need to fully understand the relationship between communications and the "developing" process. It is concluded that one cannot generalize about developing countries and draw conclusions which would be relevant to all. It is accepted, however, that improving telecommunication systems ie., conventional services and mass communication media, radio and television, is a valid activity which could lead to improving the social well-being, eg., literacy, of a developing country. It is also recognized that improvements to the communication capability in developing countries can be a vital catalyst or pacing item in achieving the full exploitation of the potential for development. Nevertheless, it should be noted that the rate of introduction of cultural change which could be brought about by an accelerated introduction of improved communications is a significant factor, and it is not irrational to have assigned a low priority to electronic communications in order to allow change to evolve in an orderly fashion while retaining cultural inheritances.

A separate report to the Telecommisison, entitled "Communications and Development in the Seventies" by F.L. Goodship of the Communication Department, UNESCO, is an annex to the report herein. The Goodship report is primarily concerned with the processes of mass communication, and its role in development, especially in its electronic forms of radio and television. The report discusses five separate aspects as follows:

1. the function of mass communications in the developing world.
2. the present state of communications development in some representative developing countries.
3. the major agencies, both national and international, which are associated with communication development.
4. the needs of developing countries and assigns a scale of priorities.

5. suggests how the most urgent needs can be met, and how both national and international agencies can best assist in the process.

Roles of Traditional Communications

Satellite Communication has become a major element in planning the improvement of national and global communications. No other single development contains the potential to interconnect all nations via a common communication system. In addition, some developing countries are in a unique position to benefit directly from this technology, not presently being encumbered by a large investment in terrestrial transmission and distribution systems. Many developing countries are planning the use of satellites as a major, vital, national capability to accelerate their social and economic development. Other countries, because of geographic considerations, for example, joining East and West Pakistan require satellite communications to eliminate their dependence on foreign systems for passing purely domestic traffic. Satellite communications presents mankind with unprecedented possibilities to assist in solving some of the urgent needs of the developing countries to achieve efficient and increased flow of information, and to reduce the isolation of countries, communities and individuals. The developing countries have already recognized the importance of satellite communication to provide reliable external communication links. Of the 75 Member Countries of the International Communication Satellite System (INTELSAT) as of 15 April, 1970, 52 are listed as developing countries within the OECD criteria. A list of the members of INTELSAT showing the developing countries are contained on pages 36, 37, and 38.

Broadcasting from satellites represents an advanced stage of the general development of satellite communications. The effects and implications of satellite systems used for broadcasting purposes must be set against the background of the political, social, economic and technological environment into which they are introduced. The increase in capacity and flexibility, and the potential for national and international services provided by satellites, as compared with terrestrial systems, point to new patterns of broadcasting geographically and functionally with far-reaching social implications. Men and women everywhere will become more conscious of their environment. Such opportunities carry with them commensurate responsibilities. The common interest in taking full advantage of these opportunities demands common action; a partnership between the developing countries and the

industrialized nations for the utilization of satellite systems for educational, economic and social development purposes.

In a long term perspective, it can be expected that various types of 'point-to-point' communications, distribution, semi-direct and direct broadcast satellite systems will be in use simultaneously. An important consequence will be the development of new concepts for communication and broadcasting satellite systems characterized by greater flexibility to decide and organize communications according to social needs and general requirements.

The possible effects of satellite broadcasting should be seen against the background of the explosive development in radio and television all over the world, which has turned the electronic mass media into one of the most important and persuasive means of communication and information, dissemination

Through active participation in space research and technology, Canada has developed competence in the development, construction and utilization of satellites and earth stations. The Canadian Alouette-ISIS programme of scientific satellites is an excellent example of how an international programme can help nations which do not have the resources and skill to build their own satellites. Based on experience gained in the development and construction of Earth's terminals, as well as through participation in experiments with low channel capacity satellites, such as for communication between Earth's terminals and aircraft and ships using satellites, Canada has been able to advise developing countries as well as international organizations on the utilization of satellites for scientific and communication purposes. These activities also include advice given on system design characteristics and the interpretation of operational requirements of the potential user.

INTELSAT MEMBERSHIP

15 April, 1970

* ALGERIA	February 19, 1965
* ARGENTINA	May 19, 1965
AUSTRALIA	August 24, 1964
AUSTRIA	May 6, 1965
BELGIUM	February 10, 1965
* BRAZIL	May 17, 1965
* CAMEROON	November 6, 1969
CANADA	August 20, 1964
* CEYLON	February 17, 1965
* CHILE	May 18, 1965
* CHINA	February 17, 1965
* COLUMBIA	February 19, 1965
* CONGO, DEMOCRATIC REPUBLIC OF	February 2, 1970
DENMARK	March 3, 1965
* DOMINICAN REPUBLIC	January 12, 1970
* ETHIOPIA	February 19, 1965
FRANCE	January 18, 1965
GERMANY	September 21, 1964
* GREECE	May 19, 1965
* GUATEMALA	March 7, 1969
* INDIA	February 19, 1965
* INDONESIA	February 19, 1965
* IRAN	September 3, 1968

* IRAQ	February 17, 1965
IRELAND	October 5, 1964
* ISRAEL	November 30, 1964
ITALY	March 10, 1965
* IVORY COAST	September 10, 1969
* JAMAICA	February 4, 1969
JAPAN	August 20, 1964
* JORDAN	February 12, 1965
* KENYA	October 11, 1967
* KOREA	February 24, 1967
* KUWAIT	February 12, 1965
* LEBANON	February 12, 1965
* LIBYA	February 12, 1965
LIECHTENSTEIN	July 29, 1966
LUXEMBOURG	February 24, 1969
* MALAYSIA	May 25, 1966
* MEXICO	October 25, 1966
MONACO	February 28, 1965
* MOROCCO	June 22, 1966
THE NETHERLANDS	August 21, 1964
NEW ZEALAND	February 12, 1965
* NICARAGUA	February 11, 1969
* NIGERIA	December 8, 1965
NORWAY	August 31, 1964
* PAKISTAN	June 30, 1965
* PANAMA	October 20, 1967

* PERU	June 9, 1967
* PHILIPPINES	November 30, 1966
PORTUGAL	January 14, 1965
* SAUDI ARABIA	February 19, 1965
* SINGAPORE	June 3, 1966
SOUTH AFRICA	February 8, 1965
* SPAIN	August 20, 1964
* SUDAN	April 5, 1965
SWEDEN	January 18, 1965
SWITZERLAND	September 16, 1964
* SYRIA	February 12, 1965
* TANZANIA	June 16, 1967
* THAILAND	May 12, 1966
* TRINIDAD & TOGAGO	January 20, 1970
* TUNISIA	February 19, 1965
* TURKEY	May 6, 1968
* UGANDA	January 5, 1968
* UNITED ARAB REPUBLIC	February 19, 1965
UNITED KINGDOM	August 20, 1964
UNITED STATES	August 20, 1964
VATICAN CITY	August 20, 1964
* VENEZUELA	December 30, 1965
* VIET NAM	February 21, 1969
* YEMEN	June 29, 1965
* YUGOSLAVIA	February 24, 1970
* ZAMBIA	March 20, 1970

Telecommunication in Transportation: The economic

development of any country depends to a very large extent on the availability of an efficient transportation systems. Without efficient transportation products cannot be moved from their source of origin to their ultimate market. In general, transportation includes surface, marine and air transportation systems. In turn, surface transportation can include road and rail transportation, and oil and gas pipe-lines, while marine transportation consists of both ocean going and inland river and canal traffic.

In all forms of transportation, telecommunication support services are vital to efficient operations. For example, it is impossible to envisage the operation of modern railway systems without adequate communications to report the location of trains, to operate signals and to control traffic. Oil and gas pipe-lines are completely dependent on good telecommunications for control and telemetry purposes. The need for adequate and reliable communications enters all phases of the operations of shipping and air services which includes coordination of traffic from and into docking facilities and airports respectively. Communications in support of these latter services can be considered to include radio navigation support system, for example, Loran, Omega and Decca and shipborne and airborne radar.

In the not too distant future the application of geo-stationary earth satellites for position determination, navigation, and communications could possibly lead to major orientation in the way in which communication support services are "meshed" with the major elements in transportation.

Developing countries which do not presently have sophisticated communication systems in transport applications could, perhaps, be in the best position to benefit from technological advances. Nevertheless, where international traffic is involved, certain facilities must conform to a high degree of existing standardization. For example, the technical performance requirements of much of the airborne and airport equipment are rigidly standardized by the International Civil Aviation Organization (ICAO).

Undoubtedly, there is an intimate relationship between the improvement of transportation services and their communications support systems, with the result that the improvements and augmentations in these areas require close coordination.

Technological Developments and Their Implications: Among the many technological developments of the last two decades, television, wideband radio relay and satellite communication systems have received particular attention in assistance programmes related to the need to improve telecommunications and mass communication capabilities in developing countries. However, for example, satellite communication represents an extreme example in a class of large-scale projects. This class is characterized by three main features.

- A very large investment may produce very large effects, but no results can be obtained until a high threshold level of investment is made.
- Once operational systems of the above class require a very high intensity of utilization which in turn could incur high costs; for example, the development of programming for TV.
- The decision to incur the high initial investment has to be made before one can confirm that an effective utilization for the given environment has been developed.

Most of the developing countries are usually faced with similar urgent economic and social problems, such as, increasing productivity in the agricultural and industrial sector, and containing population growth. Because of this, many developing countries have yet to develop plans for the utilization and implementation of well organized communication networks and television systems which are necessary to communicate in an environment where the population is widely dispersed and the illiteracy is high.

Since most of these countries are yet to use modern communications technology, there is a temptation to conclude that savings can be effected and the countries enabled to take a large step into an altogether new plan of technology. The possibility of implementing modern communication and television systems including programme production facilities is an exciting one which could yield long-range socio-economic benefits and assist in arresting the widening gap between the industrialized world and the developing countries. However, because of the limited exposure to modern technology and the lack of adequately trained personnel in some of the developing countries, the appropriate rate of introduction of modern technology is a vital consideration.

In the area of mass communication and education, the problems may be more appropriately approached by the use of small self-contained systems which permit production or adaptation of programmes and their use with small audiences as an effective method of using the medium in a particular environment. For example, a portable tape recorder was the first in this kind of approach, but non-visual presentations are very limited in their effectiveness, while a film camera and projector requires a film development laboratory, is costly and requires highly skilled personnel and lacks the facility for instant replay. A closed circuit television record and replay system has most of the desirable characteristics but until recently, the cost and size have been prohibitively large and reliability poor. The Electronic Video Recording (EVR) represents a further promising breakthrough in this area.

To assist the developing countries to achieve their objectives they will require continuing help in the evaluation of the benefits and limitations to be derived from the application of new technology, and in the development of system concepts based on requirements of the individual countries.

A comprehensive report covering the communication developments of the last two decades is beyond the scope of this report. However, in brief, it can be said that the rapid advances in communications would not have been possible without the development of solid state and integrated circuit techniques, leading to small equipment designs with low power requirements, and reduced maintenance costs. With the applications of computer technologies to all aspects of communications, data processing and information systems, a major result will be in shortening the time when developing countries will be in a position to benefit from modern advances in engineering and system designs.

The Reader is referred to the Telecommission Report No. 4(a), which contains an extensive review of technology developments which affect all aspects of communications.

SECTION IV

FACTORS IN PLANNING FUTURE ASSISTANCE

Communication Equipment

Communication equipments fall into two major categories; equipment used for installation as part of operational systems, and equipment used for training purposes.

In the first category there is capacity in Canada for the supply of automatic switching systems, subscriber instruments, radio and carrier equipments and satellite communication ground stations. The problems facing the Canadian companies are many but the one that is somewhat limiting is the technical incompatibility between Canadian systems and systems used outside Northern America. The Canadian system is compatible and completely integrable with the US system. However, in communicating between Canada and Europe, there are both technical and operating differences.

The ITU is now recognizing two standards, a North American standard and a "rest of the world" standard. This duality places serious limitations on the Canadian suppliers in their pursuit of export opportunities, and on their competitiveness in the provision of equipments within assistance programmes. Canadian companies are faced with two options: (1) to find a market which will readily accept a product designed for the Canadian system or (2) to adapt a current line or develop new equipment. The latter option requires that Canadian suppliers have a research and development activity, which many do not have, particularly the companies which are not owned and controlled in Canada. Some companies, however, have met this challenge and have invested in research and development towards the internationalization of Canadian communication equipments.

Communication Systems Planning and Engineering

Experience has shown that merely supplying equipments and building communication systems in developing countries is not enough. Developing countries have serious problems in supplying the need for technicians, and lower, middle and upper management to operate and maintain modern systems. They require a much higher level of skills than is now available in most developing countries. Too often a soft loan programme associated with the

provision of new systems does not extend into the subsequent phase of training people to maintain, operate and administer their system efficiently. A follow-through training programme would normally extend over a period of up to two years, depending upon the level of skills available and the ability of the trainees to absorb the new technology.

In addition to the training need, developing countries are usually short of planning expertise, people who can look ahead five to ten years, prepare basic augmentation plans and initiate their implementation. Canadian skill and experience exist in all these areas and the Government should consider making them available to developing countries through assistance programme. Substantial assistance has been given to many countries by the ITU, and the European countries have already contributed a great deal of skilled manpower, and assisted in setting up communication administrations.

There are some difficulties associated with the provision of technical assistance. First, the assistance available must be provided within a correct appreciation based on a realistic assessment of priorities and the availability of scarce resources and skills in the individual developing countries. Very often, what is asked for may not be what is really needed and it requires a delicate balance to ensure that agreement is reached between the donor and recipient countries. In some cases, assistance may not be available because of the total differences between the social and economic structures in the donor and recipient countries. Second, it is essential that any technical assistance given should be aimed towards making the recipient country self-sustaining. It is not enough that the developed countries do the job for them. They must also train the local people to take over so that the assistance people can return home knowing that their work will be continued and the full benefits of the assistance investment will be achieved. Scholarships for students and trainees to attend places of education and instruction in the donor country have been granted. However, sometimes the trainee does not wish to return to his own country because he has become accustomed to the standards of living in the donor country, which may then be accused of causing a brain-drain from the recipient country. Also sending key personnel away for instruction and training, means that these people have to leave their jobs, which then have to be filled probably by a less qualified person and this creates a problem

of manpower resources. Although study abroad is excellent for specialized subjects and higher education, it seems preferable to set up instructional facilities in the recipient country, where the instructors and technical assistance personnel from the donor countries can stay for up to two or more years.

In order to help a country to develop its telecommunication systems, there should first be a study of its requirements by a Canadian consultant. This would be in the nature of a feasibility study in order to determine whether the system requested would truly meet the stated needs, and also whether appropriate consideration had been given to other aspects of economic development to ensure the maximum exploitation of an increased telecommunication capability. Studies have already revealed that with so many pressing problems in developing countries, several ministries will tend to acquire their own communication systems without an awareness of the fact that other ministries also intend to implement systems, quite often overlapping each others' interests. A preliminary study could lead to economies by showing that there are benefits from integrating their total communication requirements into one common system. For example, it is quite often possible to integrate the expansion requirements of radio and television services, internal security, and national defence into the expansion plans of the national telephone organization at less cost than that of separate implementations.

After a system study has been completed, serious thought has to be given to the country's resources of skilled manpower to operate and maintain a modern communication system. Canadian planning should ensure that provision has been made for these purposes, which may involve the use of Canadians or others. However, most recipient countries will specify that Canada is to include the training of nationals to operate and maintain the system. If a study shows that adequate recruitment of suitable trainees from the local population is unlikely, the size or complexity of the system may have to be limited accordingly. Another factor of paramount importance is the viability of the proposed system. If, because of optimistic planning, the system becomes an economic burden, it will eventually deteriorate and Canada become liable to support it, perhaps for many years, if only to preserve our reputation and image. Similarly, a scrutiny of managerial plans is, therefore, highly desirable before agreeing to support the implementation of a system in any developing country. Canada has unsurpassed expertise in telephone management and full advantage should be taken of this asset.

Information Services

Developed technology is a major resource which can be made available to the developing countries through provision of information services. Information will be of greatest value only if these countries have the knowledge that will allow them to absorb, assess, and apply it to their individual development needs. Since the educational level and the availability of trained people are limiting factors in some of the less developed countries, simply making accessible the gamut of available information cannot in itself be considered the total answer. Assistance in the selection and application of scientific and technical knowledge appropriate to their particular problems and conditions will still remain a necessary activity of the developed countries. This is particularly true in the interpretation and adaption of advanced technology.

Advances in communications technology, including information input, storage and retrieval systems, can make a significant contribution to the dissemination of information on a global scale. Two basic constituents of the information needs of developing countries are:

- (a) The scientific and technological information which is both the result and the cause of industrial innovation and growth in industrialized countries;
- (b) The experience in social and economic development of the donor countries and of other developing countries.

The Development Centre of the OECD recognized this in 1965 when it established the Development Enquiry Service to provide a question-answer service in the field of economic and social development to developing nations. This service attempts to marshall the resources of major international development agencies, such as the ILO and the FAO, along with the experience of major donors, such as the German Foundation for Developing Countries and US-AID.

The users of this free and fairly rapid service have exposed two outstanding problems. The most obvious is the lack of clarity in questions submitted, which results in much correspondence back and forth to ensure that the question being answered is the one intended. The second problem arises because there is no central agency in any of the developing countries through which questions and answers can be channeled. This results in the same wasteful duplication of effort that exists in the developed nations.

Some time ago, the Development Enquiry Service suggested that efforts be made to establish national clearinghouses within the developing countries. Attempts were made to standardize their proposed structures, but it was eventually realized that cultural differences made this impracticable.

Several donors have considered providing information services aid in various forms:

- the training of documentalists;
- the building of libraries.

Beyond simply making information accessible to developing countries, there is that aspect of information dealing with training and education. Making available the capital equipment, such as facilities for television, films, and audio visual materials, will not ensure effective usage.

Where people must adapt within a very short space of time to totally new cultural and environmental changes, participatory information can be very valuable. The National Film Board, in its "Challenge for Change" programme, has developed film and videotape processes to permit underprivileged people in depressed areas, to probe their social and economic problems on self-help basis. In turn, these audio-visual records are used in restricted presentations to social workers, government officers, etc. During the past three years, this project has been used in Newfoundland villages, in urban slum areas and in Canadian-Indian communities. Two of NFB's staff members have conducted similar projects in California and Connecticut for the US Office of Economic Opportunity. This method could possibly have significant results if applied on a substantial scale to aid programmes.

Regional Educational and Training Facilities

The establishment of regional training centres is particularly appropriate when a number of small developing countries each have a need for trained personnel to operate and maintain communication systems, and where the establishment of a national training facility cannot be justified. In general, the Canadian International Development Agency (CIDA) is interested in assisting projects of a regional integrated nation. The normal criteria used by CIDA, including the priorities attached to a multinational project by recipient countries, is carefully applied before any decisions are taken. In the field of telecommunications, CIDA would be prepared to investigate specific requests within the framework of its existing programmes.

Consulting Services

Canada has excellent consultants in all fields of telecommunications and the mass communication media. When studies and technical assistance are requested by developing countries, Canadian consulting services in the private sector should be considered wherever possible. While it is recognized that excessive use should not be made of Crown Corporations and Government Departments for this purpose, nevertheless, there are some fields in which the expertise available in such bodies represents a large portion of this resource in Canada. The case is evident for development and encouragement of consultants in the private sector, leading to more viable enterprises and to their greater achievement of international recognition. The Canadian Government Departments concerned with assistance programmes are urged to maintain, expand and diversify their support to the development of consulting services in the private sector.

It should be noted that, whether Canadian Government Agencies or private consultants are involved, the approach to assistance must take into account the best interests of the recipient countries.

Government Assistance to Canadian Industry

There are several arrangements by which the Government provides direct assistance toward the development of Canadian industry, for example, the IRDIA and PAIT programmes. These arrangements were not developed with any relationship to international aid programmes in mind, but were, in fact, developed to encourage innovation and industrial growth, and to benefit the national economy. To the extent that these programmes are successful, they will contribute to the improvement and broadening of the Canadian industrial

and product base, thereby, widening the scope of possible Canadian response to the needs of developing countries.

Competitiveness of Canadian Suppliers

The technical and cost competitiveness of Canadian suppliers in world markets is basically a consideration in the development of the Canadian export potential; therefore, "foreign market development" cannot be proposed as a major justification for aid. Nevertheless, bilateral assistance provided in telecommunications establishes the presence of Canadian goods and services in recipient countries. Competitiveness, moreover, has a significant meaning to Canadian suppliers of goods and services, in the assistance context, when recipient countries receive assistance through multi-lateral financing agencies in which the contributing countries are not identified with the loans and the specific projects. In this case, international tendering is sought and, in general, the lowest-bidder approach is used, unless requested otherwise.

Basically, on large systems, for example, microwave installations, telephone exchanges and satellite communication ground stations, where design is to customer specifications and quantity production is not a predominant factor, Canadian suppliers are competitive. Canada's telephone management consulting capabilities are second to none in the world and their services are very competitive while offering an exclusive expertise in this area.

Canadian Subsidiaries in Recipient Countries

The most experienced aid-granting nations actively promote and assist the establishment in developing countries of branch offices and plants of the national companies. Whether Canadian government support for the establishment of Canadian telecommunication subsidiaries in developing countries could be an appropriate activity within the Canadian assistance programme as administered by CIDA should be examined. This question has a particular significance for Canada where major elements of the telecommunication industry are foreign owned. Moreover, subsidiary plant development would normally be reserved as a parent company activity.

A subsidiary telecommunication manufacturing plant has already been established in Turkey and is being considered in Greece by a Canadian-owned company. However, little consideration has been given to-date to

extending the role of CIDA for this purpose. Under present legislation, CIDA is permitted to finance a developing country in the construction of a manufacturing plant, if so requested, but cannot use its assistance funds to finance the equity portion that a Canadian firm might wish to have in such a plant.

If this were possible the advantages to the recipient country would be:

- (a) The provision of employment, training, and advanced technological knowledge.
- (b) The knowledge acquired in new skills by the local population usually results in the creation of small peripheral manufacturing concerns.
- (c) By providing increased local content, the drain on the country's foreign currency is reduced for the purposes of maintenance or expansion of its systems.

The advantages to Canada would be:

- (a) If the establishment of a subsidiary plant is offered along with the requirement for a telecommunication system to a country requesting CIDA assistance, the offer is more attractive, particularly, if competing soft loans are available from other donors for the same project.
- (b) The recipient country will, in most cases, establish the necessary protection for the new subsidiary and ensure that its future requirements are placed with this subsidiary.
- (c) The Canadians operating such a subsidiary will become completely conversant with the country's telecommunication expansion requirements and will be in an excellent position to submit proposals that may result in directed contracts.
- (d) The possibilities of follow-up business are greatly increased because of the interest of the local governments in seeing the subsidiary grow, particularly, if the arrangement includes an equity share in the facilities by the local governments.

Many considerations would be involved in examining the question of Canadian Government support for the establishment of Canadian telecommunication companies in developing countries. Thus, the Study Group Members have concluded that the Government should consider means to support this activity and examine possible avenues for such support, while bearing in mind that CIDA would appear to be an unsuitable vehicle for this purpose.

SECTION V

CONCLUSIONS

There are several obvious reasons why developing countries need outside assistance in their quest for economic and social progress. The report discusses many of the limitations which confront the developing countries and reviews, in particular, the kinds of assistance which have been provided and is still needed in the fields of telecommunication systems and mass communication media, radio and television.

The reasons for giving aid, however, range from a genuine desire to share the successes of the developed countries to rather pragmatic considerations. Three major objectives in offering aid are readily identifiable:

(1) The Altruistic Objective

Within this category, the motivation may range from the deep desire to share our bounty with others to the more cynical concept of aid as a debt of conscience. Whatever the reason, this type of programme has a selfless character and seeks no specific return on the investment.

(2) The Market Objective

In this category, the goals could be, too readily, considered simple and uncomplicated. Where bilateral aid is provided to a developing country for the implementation of communication systems there is, of course, an element of establishing a Canadian presence in that country, and this in turn can be interpreted as assistance to Canadian industry towards export development. Nevertheless, long-term benefits to Canadian industry will accrue only if subsequent opportunities can be developed to exploit the initial aid-assisted advantage.

(3) The Cultural Objective

While this purpose has not been a major consideration in the past, for Canada, it is likely to receive more attention in the future. Culture here is not intended to imply beaux arts for the intellectual elite but rather the improvement of the total quality of life for the individual through various processes of self identity, dialogues, assessment of values, etc.

If the foregoing represents a reasonably valid set of assumptions, then aid programmes will consist of varying mixes of these objectives depending on the circumstances. Irrespective of the major objective, in a particular case, one or possibly both of the other objectives would be important considerations in determining the kind of assistance to be provided.

In the approach to aid programming, Canada has certain unique advantages:

- (1) Of all the donor nations, Canada is closer in character to an emerging nation. It is still underdeveloped, and it is constantly faced with the question of trading off its assets at the price of its sovereignty.
- (2) Since Canada poses no political or economic threat it enjoys the confidence of most recipient countries.
- (3) As well as technological sophistication and well developed scholarship, Canada has the tremendous advantage of lead time.

If these distinctive assets are clearly recognized, it is most important to maintain them in recommendations regarding aid programmes. Since Government at its various levels is Canada's largest enterprise, the resources for aid must involve its departments and agencies in various partnerships with public and private Canadian monopolies, foreign controlled Canadian enterprises, and Canadian controlled business.

It is not possible nor appropriate to suggest that there should be a specified percentage of the assistance programmes devoted to communications, either in bilateral or multilateral aid to developing countries. It is perhaps correct to state that there are no two equally underdeveloped countries nor two countries with equal potential for development. Although limited categorization is possible, each country must be treated separately, recognizing that priorities for assistance are established by the individual country. Nevertheless, it can be generally concluded that there is a trend which would indicate that communication assistance is assuming greater importance. This being due, perhaps, to two factors, (1) a growing recognition that communication services, ie., conventional telecommunication and mass communications, radio and television, in all its phases is vital to increasing the rate of economic and social progress in the developing countries, and (2) over the past decade much emphasis has been given to establishing capabilities in the major economic sectors, transportation, power, agriculture, etc., and that telecommunication has now become an important priority for the developing countries.

There is a continuing process of multinational groupings taking place as represented by the setting up of new regional development assistance banking facilities. This, in some cases, would suggest a future polarization toward increased regional economic and industrial interdependence. Although it cannot be concluded at this time, that it will become difficult for bilateral assistance to pass from a developed country of one region to a developing country of another region, nevertheless, the new regional groupings could present a challenge to the effective coordination of future bilateral programmes and those of global institutions, such as the World Bank and the UNDP.

SECTION VI

SUGGESTIONS

In the course of this study, many different suggestions for improving the Canadian Assistance Programmes in Telecommunications were offered. The following are the more important ones:

- in view of the apparent trend in which support in telecommunications is becoming a larger portion of the total assistance to developing countries, that the Canadian assistance programme emphasize the value of improved communications both in the provision of conventional telecommunication systems and mass communication facilities, ie., radio and television, while recognizing that priorities are established by recipient countries.
- that research be encouraged into the relationship between communications and the development process, considering that one cannot generalize about developing countries and draw other than the most general conclusions which would be relevant to all developing countries.
- that the Canadian assistance programme recognize the totally integrated system characteristics of programmed communication projects, (concerned, for example, with education, public information, etc.), by ensuring that appropriate software development studies accompany system implementation and augmentation projects.
- that the Canadian Government should consider supporting the establishment in developing countries of subsidiaries of Canadian companies, particularly, manufacturers in the telecommunication field, and examine possible avenues for such support while recognizing that CIDA would appear, at present, to be an unsuitable vehicle for this purpose.

- that consideration be given to encouraging Canadian industry, by a greater degree of governmental financial support, to participate in telecommunication training of nationals from developing countries, whether the training be in Canada or in the recipient country.
- that consideration be given by the Canadian Government to making assistance available for the development of consulting services in the private Canadian telecommunication sector, recognizing that regional development banks may prohibit consulting firms and the manufacturing firms associated with them from sequential participation in directly related programmes.
- that before technical assistance and consulting services are provided by Government Departments or Agencies, the private sector should be allowed to express its interest in participating in the projects.

MULTILATERAL ORGANIZATIONSASIAN DEVELOPMENT BANK (ADB)

The agreement establishing the Asian Development Bank came into force on 22 August, 1966, the inaugural meeting was held at Tokyo in November, and the Bank commenced operations on 19 December, 1966. The authorized capital stock was \$1,100 million (US). As of 31 December 1967, there were 10 Regional Member Countries accounting for \$165 million, and 13 Non-Regional Member Countries making available an additional \$355 million. Two additional Regional Countries have joined, Hong Kong and Fiji, bringing the membership total to 34. Canada agreed to provide \$25 million (US) to the Special Fund of the ADB for soft loans. The channel of communication with Canada is the Department of Finance and the Minister of Finance is a Member of the Board of Governors.

Canadian funds supplied to the Bank are tied to Canadian procurement but to-date, there have been no telecommunication projects financed by CIDA through this institution. There have been no identifiable telecommunication projects financed by the Bank. Their Technical Assistance programmes have concentrated on Agriculture and Fisheries, Transportation, and Development Banking.

CARIBBEAN DEVELOPMENT BANK (CDB)

The Caribbean Development Bank was inaugurated on January 31, 1970. Canada, as one of the non-regional members, allocated \$10 million (US) to the capitalization of this institution plus a \$5 million (US) contribution (over 5 years) towards the Bank's Special Fund to be used for concessional lending. Because of the recent formation of the Bank, no comment can be made at this time on its possible involvement in telecommunications projects.

INTER-AMERICAN DEVELOPMENT BANK (IDB)

The IDB is a regional hemisphere agency consisting of 21 member nations of the Inter-American System, including the U.S.A. It became operational 30 December, 1959.

The Bank was established with two separate resources - its Ordinary Capital Resources, and its Fund for Special Operations. By the end of 1970, it is expected that the Ordinary Capital Resources will have reached \$3,150 million (US) and the Fund for Special Operations \$2,321 million (US). In addition, the Bank administers the Social Progress Trust Fund for the United States Government, (\$525 million). Through other agreements, the Bank also administers or channels resources for Latin America's development from countries which are not members of the Bank. The Bank administers funds for Canada. As noted previously, CIDA, through the IDB, has provided a development loan to Chile to extend the microwave system and improve other communication systems in that country.

The IDB is acting as the executing agency for the UNDP for pre-investment feasibility studies of the requirements for installing international connections needed to interconnect the individual systems of each of 15 participating countries. (Central American Member Countries are not included in these studies). The Bank will carry out the programme in association with the International Telecommunications Union (ITU) and the Inter-American Telecommunications Commission (CITEL) will play a coordinating role. Interconnections between the various national segments will be through a combination of microwave stations, submarine cable, and satellites. The new system will provide telephone, telex and telegraph services, as well as television and radio broadcasting channels.

As of October 1969, 538 loans had been authorized from all the various funds of the Bank for a total of \$3,148.8 million (US). There were no loans specifically identifiable in support of telecommunications. The activities receiving emphasis included Agriculture, Transportation, Electric Power, Industry and Mining, and Housing.

THE WORLD BANK GROUP

The World Bank Group consists of three international financial institutions, the World Bank itself (formally the International Bank for Reconstruction and Development formed in 1945), and two affiliates, the International Development Association and the International Finance Corporation. Each has its own special function, but all are devoted to the same general objective - the promotion of economic development.

The World Bank, the senior institution of the three, makes loans to governments, or with a government guarantee, at conventional rates of interest for high-priority projects designed to increase the output of useful goods and services and to raise standards of living. By May 31, 1970, the Bank had 110 members and had made loans totalling \$14,239 million to some 85 countries.

The importance of effective coordination among multilateral and bilateral donors of assistance, and between donor and recipient countries has become increasingly evident over the past several years. The Bank has played a significant role in this respect by bringing together interested governments to form consortia, in the case of India and Pakistan, and by helping to organize other coordinating groups for a number of countries. Twenty-two nations have been associated, either as members or observers, with one or more of the Bank-organized aid coordinating groups. The Bank sponsored aid coordinating groups and assisting countries are shown in Table A-I.

A report by the Commission on International Development was prepared for the World Bank and submitted to its President, Mr. Robert S. McNamara, on September 15, 1969. The Right Honourable L.B. Pearson was Chairman of the Commission. Because of the increasing concern about the future of international cooperation for economic development, a broad approach was followed with the general objective of studying the consequences of twenty years of development assistance, assessing the results, clarifying the errors and proposing the policies which will work better in the future. The report was subsequently published as a book entitled "Partners in Development". The report does not necessarily reflect the views of the World Bank, nor of any government or international organization.

TABLE A-1

BANK-SPONSORED AID COORDINATING GROUPS

Recipient Countries	ASSISTING COUNTRIES																					
	Australia	Austria	Belgium	Canada	China	Denmark	Finland	France	Germany	Italy	India	Japan	Kuwait	Libya	Netherlands	New Zealand	Norway	Spain	Sweden	Switzerland	UK	US
Consortia																						
India		X	X	X		X		X	X	X		X			X				X		X	X
Pakistan			X	X				X	X	X		X			X				X		X	X
Consultative Groups																						
Colombia			X	X		X		X	X	X		X			X			X			X	X
East Africa				X		X		X	X	X		X			X		X		O	X	X	X
Korea	X	O	X	X	X		X	X	X	X		X			X						X	X
Malaysia	X		X	X		X		X	X	X		X			X						X	X
Morocco			X	X				X	X	X		X			X			X			X	X
Nigeria			X	X				X	X	X		X			X			X			X	X
Peru			X	X				X	X	X		X			X			X			X	X
Sudan			X	O				X	X	X		X			X			X			X	X
Thailand	X		X	X		X		X	X	X		X			X						X	X
Tunisia		X	X	X		X		X	X	X		X			X			X			X	X
Other																						
Ceylon	X			X		X		X	X	X		X									X	X

OTHER AID COORDINATION GROUPS IN WHICH BANK PARTICIPATES

Recipient Countries	ASSISTING COUNTRIES																US
	Australia	Austria	Belgium	Canada	Denmark	France	Germany	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Sweden	Switzerland	UK	
Ghana ¹				X	X	X	X	X	X				X				X
Greece ²			X	X	X	X	X	X		X	X					X	X
Guyana ³		X		X			X			X						X	X
Indonesia ⁴	X	O	X	O		X	X	X	X		X	O			O	X	X
Turkey ²		X	X	X	X	X	X	X			X		X	X		X	X

¹IMF-sponsored Ghana Aid Group ²OECD-sponsored Consortium ³Guyana-sponsored Aid Group ⁴Dutch-sponsored Intergovernmental Group for Indonesia
X = Member O = Observer

The International Development Association (IDA) formed in 1960 and now with 102 members, finances the same general type of projects as the Bank, selected according to the same standards, but on terms which place a much lighter burden on the balance of payments of the borrowing country. Credits extended by IDA to-date have been for a term of 50 years, with a 10 year initial grace period and no interest charge, only a service charge of one percent. Its assistance, in the main, has been confined to countries where per capita incomes are exceptionally low and which cannot meet all their external capital requirements on the basis of borrowing on conventional terms. At the end of May, 1970, credits amounting to about \$2,600 million had been extended by IDA to 54 countries.

The International Finance Corporation (IFC) formed in 1956, supplements the activities of the Bank by making and encouraging investments on commercial terms in productive private enterprises in developing member countries. By March 31, 1970, IFC had made net commitments totalling \$400 million to private companies in more than 40 countries.

Membership is open to all governments which are Members of the World Bank. There are, at present, 93 members, including Canada. There is one member on its Board of Governors from each member country. The general operations of the Corporation are vested in a Board of Directors made up of the Executive Directors of the World Bank. On January 1, 1970, IFC's share capital - all subscribed by its member countries, was approximately \$107 million. It had also a reserve of \$54 million derived from accumulated earnings and is empowered to invest an amount, at present, of about \$428 million. Canada's voting power is approximately 3 percent.

Every venture in which IFC invests must hold out a prospect of earning a profit, and must benefit the economy of the country in which it is made. IFC neither requires nor accepts government guarantees of repayment on its investment.

In addition, and as part of its aim of encouraging and facilitating the flow of capital from the developed to the developing countries, the Bank sponsored the establishment of the International Centre for Settlement of Investment Disputes (ICSID). The Centre, which came into being in 1966, provides facilities for the settlement of international investment disputes between private investors and governments.

The 1969 fiscal year was one of considerable expansion for the World Bank Group. The new commitments made by the Bank and its affiliates, the International Development Association (IDA) and the International Finance

Corporation (IFC), to member countries rose to a level substantially higher than in any previous year in the Group's history and 87% above the level for fiscal year 1968. The primary categories for Bank and IDA aid during the 1968/69 period were agriculture, transportation, electric power and industry. The economic sectors where Bank-IDA lending expanded most rapidly were agriculture and education; in terms of geographical areas, the growth of Bank and IDA lending to African countries was particularly marked. The new overall lending peak reflects the Bank Group's determination, as voiced by the President at the 1968 Annual Meeting, to increase still further its contribution to the world-wide development effort over the coming years.

The Bank loans and IDA credits in the 1968/69 fiscal year amounted to \$1,784 million, of which \$80.7 million (4.5%) was for Telecommunications, concentrated (\$71 million) in India and Pakistan. A like percentage was for educational purposes in 10 countries. Table No.A-2 gives a breakdown of cumulative totals to June 30, 1969, of the World Bank loans and IDA credits by purpose and major world areas. It should be noted that "Telecommunications" represents only two percent of the grand total. Considering that the Bank loans and IDA credits for 1968/69 fiscal year in "Telecommunications" was 4.5% of the total, this might suggest an increasing emphasis on the improvement of communications in the LDC's. This conclusion is supported by the recent Bank loan to Yugoslavia for \$40 million. This loan will support a seven-year \$470 million development programme to improve Yugoslavia's domestic and international telephone and telegraph services. An important item will be a ground station for operation within the INTELSAT network.

A further loan of \$11 million was made by the Bank to Singapore in support of a 4 year programme which will nearly double the capacity of the local telephone system in Singapore. This is the Bank's second loan for this expansion programme. Singapore is developing rapidly and foreign companies are establishing subsidiaries, regional distribution centres and manufacturing and assembly plants.

In addition to the flow of official capital to Developing Countries and to multilateral institutions, there is a flow of private capital. OECD has estimated that for 1968 this latter source amounted to approximately \$6,000 million with Canada's flow being \$94 million. The flow of Net

Bank Loans and IDA Credits by Purpose and Area

TABLE NO. A-2

Cumulative Total, June 30, 1969
(Millions of US Dollars, initial commitments net of cancellations and refundings)

Purpose	Total Bank and IDA	Bank Loans by Area					IDA Credits by Area							
		Total	Africa	Asia and Middle East	Austral- asia	Europe	Western Hemil- sphere	IFC	Total	Africa	Asia and Middle East	Europe	Western Hemil- sphere	
29%	GRAND TOTAL	\$14,792.7	\$12,622.4	\$1,733.7	\$4,214.9	\$515.5	\$2,405.0	\$3,653.3	\$100.0	\$2,170.3	\$386.9	\$1,558.8	\$92.5	\$132.1
31%	ELECTRIC POWER	\$ 4,279.2	\$ 4,151.4	\$ 505.0	\$ 849.6	\$149.0	\$ 641.5	\$2,006.3	\$ —	\$ 127.8	\$ 10.0	\$ 65.7	\$25.7	\$ 26.4
	TRANSPORTATION	\$ 4,601.3	\$ 3,899.1	\$ 754.8	\$1,654.5	\$ 57.9	\$ 545.6	\$ 886.3	\$ —	\$ 702.2	\$197.1	\$ 427.8	\$ —	\$ 77.3
	Railways	1,873.4	1,590.0	388.0	694.1	42.0	272.4	193.5	—	283.4	26.6	256.8	—	—
	Shipping	12.0	12.0	—	—	—	12.0	—	—	—	—	—	—	—
	Ports and waterways	471.2	445.6	133.2	162.0	6.7	98.4	45.3	—	25.6	—	25.6	—	—
	Roads	2,135.7	1,742.5	183.6	755.8	—	155.6	647.5	—	393.2	170.5	145.4	—	77.3
	Airlines and airports	22.0	22.0	—	5.6	9.2	7.2	—	—	—	—	—	—	—
	Pipelines	87.0	87.0	50.0	37.0	—	—	—	—	—	—	—	—	—
2%	TELECOMMUNICATIONS	\$ 299.6	\$ 180.5	\$ 26.7	\$ 58.9	\$ —	\$ 0.3	\$ 94.6	\$ —	\$ 119.1	\$ 0.8	\$ 118.3	\$ —	\$ —
10%	AGRICULTURE, FORESTRY AND FISHING	\$ 1,508.1	\$ 1,108.9	\$ 138.4	\$ 461.9	\$ —	\$ 99.8	\$ 408.8	\$ —	\$ 399.2	\$ 76.9	\$ 272.9	\$32.0	\$ 17.4
	Farm mechanization	24.4	24.4	5.0	9.0	—	2.0	8.4	—	—	—	—	—	—
	Irrigation and flood control	820.7	612.5	35.0	382.3	—	85.2	110.0*	—	208.2	13.0	163.2	32.0	—
	Land clearance, farm improvement, etc.	91.4	63.0	19.6	32.2	—	2.2	9.0	—	28.4	26.9	1.5	—	—
	Crop processing and storage	33.3	7.4	0.4	2.0	—	4.2	0.8	—	25.9	6.7	19.2	—	—
	Livestock improvement	179.0	153.7	5.3	4.4	—	—	144.0	—	25.3	7.9	—	—	17.4
	Forestry and fishing	31.3	31.3	5.3	14.5	—	6.2	5.3	—	—	—	—	—	—
	Agricultural credit	285.2	191.6	42.8	17.5	—	—	131.3	—	93.6	20.6	73.0	—	—
	Smallholders and plantations	42.8	25.0	25.0	—	—	—	—	—	17.8	1.8	16.0	—	—
13%	INDUSTRY	\$ 1,977.7	\$ 1,931.6	\$ 224.0	\$1,020.8	\$ —	\$ 517.2	\$ 169.6	\$ —	\$ 46.1	\$ —	\$ 11.3	\$34.8	\$ —
	Iron and steel	399.0	399.0	—	344.0	—	25.0	30.0	—	—	—	—	—	—
	Pulp and paper	133.7	133.7	—	4.2	—	109.5	20.0	—	—	—	—	—	—
	Fertilizer and other chemicals	141.3	141.3	30.0	57.0	—	54.3	—	—	6.4	—	6.4	—	—
	Other industries	252.6	246.2	20.5	5.2	—	185.1	35.4	—	—	—	—	—	—
	Mining, other extractive	154.1	154.1	101.0	19.5	—	11.9	21.7	—	—	—	—	—	—
	Development finance companies	897.0	857.3	72.5	590.9	—	131.4	62.5	—	39.7	—	4.9	34.8	—
7.6%	GENERAL DEVELOPMENT AND PROGRAM LOANS	\$ 1,132.3	\$ 552.3	\$ 40.0	\$ 103.8	\$308.5	\$ 100.0	\$ —	\$ —	\$ 580.0	\$ —	\$ 580.0	\$ —	\$ —
1.6%	EDUCATION	\$ 243.8	\$ 92.2	\$ 24.0	\$ 20.8	\$ —	\$ —	\$ 47.4	\$ —	\$ 151.6	\$ 99.3	\$ 44.3	\$ —	\$ 8.0
1.0%	WATER SYSTEMS	\$ 142.9	\$ 108.8	\$ 20.0	\$ 44.6	\$ —	\$ 3.9	\$ 40.3	\$ —	\$ 34.1	\$ 1.1	\$ 30.0	\$ —	\$ 3.0
3.4%	POST-WAR RECONSTRUCTION	\$ 496.8	\$ 496.8	\$ —	\$ —	\$ —	\$ 496.8	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
	PROJECT PREPARATION AND TECHNICAL ASSISTANCE	\$ 11.1	\$ 0.9	\$ 0.9	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 10.2	\$ 1.7	\$ 8.5	\$ —	\$ —
	FINANCING LOAN (IFC)	\$ 100.0	\$ 100.0	\$ —	\$ —	\$ —	\$ —	\$ —	\$100.0	\$ —	\$ —	\$ —	\$ —	\$ —

Note: Multipurpose loans are distributed according to each purpose and not assigned to the major purpose. Detail may not add to totals because of rounding.
*Includes Loan No. 559 Guyana, Sea defense project.

financial resources from IDA Developed Countries and Switzerland to Developing Countries and Multilateral Institutions for the period 1961-68 inclusive is given in Table A-3.

Notwithstanding the external assistance, the Developing Countries have financed 85% of the investment made in their economies out of their own resources. However, there are basic obstacles in the Less Developed Countries which place realistic limitations on the achievable rate of growth, particularly in the industrial sector. Significant factors are:

- . meager financial resources
- . lack of entrepreneurial and managerial ability
- . inadequate roads, railways and power
- . small domestic markets and difficulties in finding export markets
- . absence of known natural resources (in some cases).

UNITED NATIONS DEVELOPMENT PROGRAMME

The UNDP is one of the special bodies of the United Nations. By Resolution 2029 (XX), November 1965, the General Assembly of the United Nations decided to combine two components, the Expanded Programme of Technical Assistance (EPTA) and the Special Fund (SP) to form the United Nations Development Programme (UNDP).

Expert services, technical equipment and fellowships are provided for developing countries under the Technical Assistance Component; pre-investment projects are undertaken by the Special Fund Component.

An Administrator directs the activities of the UNDP. A 37-member Governing Council provides general policy guidance; the Council has responsibility for the approval of projects and the allocation of funds and meets twice each year, in January and June.

The UNDP has become the largest single source of multilateral pre-investment aid to developing nations, helping to carry out essential activities in agriculture, industry, education, training, health and social welfare, public administration, public utilities and services, and development planning. The UNDP is the principal financing organ of UN technical assistance and it has over the years, contributed heavily to communication

TABLE A-3

Flow of Net⁽¹⁾ Financial Resources from IDA Part I Countries and Switzerland
to Developing Countries and Multilateral Institutions
(Millions of US Dollars)

Table 3

Country	Official								Private							
	1961	1962	1963	1964	1965	1966	1967	1968 (Est.)	1961	1962	1963	1964	1965	1966	1967	1968 (Est.)
Australia.....	71	74	97	104	122	128	167	157	—	—	—	15	15	20	25	30
Austria.....	2	14	2	15	34	37	39	28	18	17	4	7	14	13	9	46
Belgium.....	92	70	80	71	102	81	99	93	72	48	95	93	119	97	66	150
Canada.....	62	54	98	128	124	212	213	213	26	55	32	14	45	55	41	94
Denmark.....	8	7	10	11	13	26	28	29	25	7	1	21	2	—5	—3	45
France.....	2	2	2	4	2	3	3	3	—	—	—	—	1	8	1	3
Germany.....	947	977	851	831	752	745	826	855	463	418	391	529	547	575	516	628
Greece.....	618	468	437	423	472	486	547	595	221	182	167	284	255	252	594	1,040
Italy.....	80	106	105	49	88	122	154	150	177	284	216	188	178	510	131	356
Japan ⁽²⁾	221	168	174	211	353	395	500	507	160	119	94	79	132	229	298	542
Netherlands.....	66	3	129	119	62	86	—	—	—	—	—	—	—	—	—	—
Norway.....	56	65	38	49	70	94	114	134	144	49	97	69	169	160	115	142
Sweden.....	9	7	21	17	12	13	16	23	18	—	1	6	27	4	15	35
Switzerland.....	8	19	23	33	38	57	60	71	44	19	31	34	35	51	59	54
United Kingdom....	23	3	6	9	3	3	5	19	187	156	197	101	188	107	130	223
United States.....	457	421	415	493	481	526	498	428	442	323	306	426	547	413	343	417
Total.....	3,447	3,536	3,699	3,445	3,627	3,660	3,723	3,605	1,102	819	880	1,325	1,898	1,360	1,842	2,071
Total.....	6,169	5,994	6,187	6,012	6,355	6,676	6,992	6,909	3,097	2,497	2,512	3,192	4,172	3,849	4,182	5,875

Net of amortization. Data for South Africa are not available, while aid from Luxembourg has been very small.

Unavailable figures indicated by —. Items may not add to totals due to rounding.

Includes, from 1966 on, estimated amounts of export credits for ships sold to flag of convenience countries going ultimately to developing countries only.

SOURCE: OECD for all countries except Finland and Kuwait, for which communications from their Governments are the source.

development through the UN Agencies. Recently UNDP has moved directly into the communication field by establishing the Development Support Communication Centre in Bangkok. This essentially film based operation is an Asian promotion centre for Project Support Communication, and Development Support Information.

For the implementation of its projects the UNDP nominates Specialized Agencies of the U.N., such as the ITU and UNESCO, as executing agencies.

In June 1969 the Governing Council of the UNDP held a meeting in Geneva, its members stressed the following:

"First, the Council emphasized the key role which the United Nations should play in development at the beginning of the second development decade in order to help governments to plan and to implement their development projects.

Second, that the Regional Economic Commissions and similar regional organizations should play an increasingly active part in the development planning at the sub-regional level.

Third, the need to co-ordinate multi-national assistance programmes with bilateral assistance by measures taken both at the level of recipient countries themselves and Headquarters of international organizations. Finally, that foremost importance will be accorded to professional training which is regarded as a point of departure for all development."

In recognition of these trends and taking into account the developments in technical co-operation not only within the framework of the UNDP but throughout the world the ITU reorganized its Technical Co-operation Department. Operational and management functions have been delegated to three regional divisions, one for Africa, one for the American and one for Eurasia. In addition, a Training Division has been established as a central point to deal with technical training of telecommunication personnel. Under the UN, the ITU has achieved an enviable record of sound technical assistance. Its telecommunication training institutes, staffed by international teams of experts are models of multilateral co-operation. Along with the ITU, which is concerned with technical planning and training, a major international communication role rests with UNESCO.

The development of information media and the training of information personnel is being carried out by the Communications Department of UNESCO in many countries. UNESCO's activities in mass communications can be summarized as follows: Research, Policies, Media Planning and Training, Application, and Publications. The programme functions at the national, regional and international levels, assisting member states, promoting and assisting regional organizations, holding regional seminars, meetings and training courses, and organizing international meetings on subjects of mutual importance to UNESCO's members.

THE INTERNATIONAL TELECOMMUNICATION UNION (ITU)

The Union was founded at Paris, in 1865, as the International Telegraph Union. This title was changed to International Telecommunication Union in 1934 when the then existing Telegraph and Radiotelegraph Conventions were replaced by the International Telecommunication Convention, which had been adopted at Madrid in 1932. ITU was reorganized in 1947 and entered into an agreement with the United Nations whereby it was recognized as the specialized agency for telecommunications.

The general purpose of the ITU is to promote international co-operation in telegraph, telephone and radio services, to further the development of these services, and to extend their use by the public. The Union has as one of its specific purposes:-

"to foster the creation, development and improvement of telecommunication equipment and networks in new or developing countries by every means at its disposal, especially its participation in the appropriate programmes of the United Nations."

Within the ITU there are communication systems planning committees, the World Plan Committee and Regional Plan Committees. The objective of these committees is:

"to develop a General Plan for the International Telecommunications Network to help in planning international telecommunications services. They shall refer to the International Telephone and Telegraph Consultative Committee (CCITT) and the International Radio Consultative Committee (CCIR) questions the study of which is of particular interest to new or developing countries."

In addition, there are Consultative Committees which are required to:

"pay due attention to the study of questions and to the formulation of recommendations directly connected with the establishment, development and improvement of telecommunications in new or developing countries."

For example, in carrying out the above objectives the ITU is directly involved in two important regional communication pre-investment planning studies. The Inter-American Telecommunications Network Study will lay the groundwork for a telecommunications network linking together Latin American countries. The Inter-American Development Bank which has been named the executing agency for the UNDP will carry out the programme in association with the ITU. The system will provide Latin American countries in the 1970's with an integrated telecommunication network and vastly improve their connections with the rest of the world. The interlinking of the various segments will be achieved through a combination of microwave stations, submarine cables, and satellites.

A feasibility study of an Asian Telecommunication Network has been initiated. The survey, partially financed by the UNDP, will be conducted by a five-man team from the International Telecommunications Union (ITU) in 12 countries of the region of the Economic Commission for Asia and the Far East (ECAFE). The countries are: Afghanistan, Cambodia, India, Indonesia, Iran, Laos, Malaysia, Nepal, Pakistan, Singapore, Thailand and the Republic of Viet-Nam.

The ITU has been named to execute the project, and ECAFE will provide support facilities for the project Headquarters in Bangkok. Under the scheme, the ITU expert team will work with communication experts in the countries concerned in studying the feasibility of a regional network designed to become part of a global plan of ITU to interconnect all telephone systems in the world.

A statement by Mr. M. Mili, Secretary-General of the ITU, at the Eighth Session of the Inter-Agency Consultative Board (IACB) on Pre-Investment Surveys forms Appendix B.

The ITU acts as the Executing Agency for telecommunication projects financed by the United Nations Development Programme under two main categories:

- (a) Technical Assistance Component
- (b) Special Fund Component

The Technical Assistance Component covers advisory and training assistance through relatively short-term projects in a wide range of technical assistance fields, provision of experts to applicant countries, grant of fellowships and scholarships, organization of seminars, supply of training equipment, etc.

The Special Fund Component covers large projects such as the establishment of training centres and research institutes or the preparation of long-term national telecommunication development plans, assistance being rendered in the form of experts, fellowships, and equipment.

In addition, the ITU administers the Operational Assistance Scheme (OPAS) whereby Operational and Executive Staff are supplied to an applicant country under a cost sharing basis. The applicant country pays the OPAS officer the equivalent salary and allowance for civil servants doing comparable work in that country and the balance is financed by UNDP.

The ITU also administers other related aid programmes,

- (a) Funds-in-Trust
- (b) Associate Expert Scheme
- (c) Funds of UN for Development of West Iran (FUNDWI).

Funds-in-Trust projects are executed and administered by the ITU but are financed entirely by the applicant country.

The Associate Expert Scheme is an agreement between the ITU and several donor countries (Denmark, Sweden and Netherlands) to provide experts whose costs would be borne by the donor countries. During 1968, Sweden supplied thirteen experts, the Netherlands five, and Denmark one. Negotiations now proceeding with the Federal Republic of Germany and Belgium for supply of associate experts.

Representative of ITU's activities in the establishment of Training Centres, the following is a partial listing of those centres which have been set up by the ITU or for which the ITU provided expert assistance:

Africa

Sudan	P&T Training Centre, Khartoum
Algeria	National School for Telecommunication Studies, Algiers
Ghana	Telecommunications Training Centre, Accra
Madagascar	National Institute of Telecommunications & Post, Antanetibé
Congo	National School of Telecommunications, Kinshasa
Nigeria	P&T Training Centre, Oshodi

Asia

Malaysia	Telecommunications Training Centre, Kuala Lumpur
Philippines	Telecommunications Training Institute, Manila
Iraq	Telecommunications Training Centre, Baghdad
Korea	Telecommunications Training Centre, Seoul
Thailand	Telecommunications Training Test & Development Centre, Bangkok
Afghanistan	Telecommunications Training Centre, Kabul
India	Centre for Research & Training on the use of Satellite Communications, Ahmedabad
Saudi Arabia	Telecommunications & Broadcasting Training Centre, Jeddah
Turkey	National Telecommunications Training Centre, Ankara
Indonesia	Telecommunications Training Centre, Bandung
Pakistan	Telecommunications Staff College, Haripur

Latin America

Venezuela	Training Centre for Telecommunications, Caracas
Colombia	Electronics & Telecommunications Training & Research, Popayan & Bogota
Chile	Telecommunications Training Centre, Santiago

THE UNITED NATIONS EDUCATION, SCIENTIFIC
AND CULTURAL ORGANIZATION (UNESCO)

As noted previously in this report, the development of information media and the training of personnel is the responsibility of the Communications Department of UNESCO. Its Director-General is authorized to stimulate and assist the development of national mass communication services in conformity with UNESCO aims, and in particular:

- (a) to promote the training of information personnel of all media, through the organization of seminars and training courses within institutes of mass communication and through collaboration with professional organizations: and
- (b) to participate in the activities of Member States, upon request, in the planning and implementation of programmes for the development of their information media and the training of information personnel.

The programme for the improvement of training facilities for mass communication personnel is being carried out through co-operation with mass communication institutes and centres established within a university framework which are able to play a role on the regional level. The aim of these institutes and centres is to provide graduate courses in communication for students of the region, refresher courses for in-service personnel, post-graduate studies in mass communication research, teacher training in the field of communication, and a meeting place for high-level professionals through symposia and round table discussions of specialized problems in the field of communication, with special emphasis on the role of the media in national development and education. Assistance is provided to these institutes through the provision of experts, equipment and study grants for students of the regions concerned, and through support for research programmes.

The following institutes presently participate in this programme:

1. Centre for Higher Studies in Journalism at the University of Strasbourg (France).
2. Centre for Higher Studies in Journalism at the University of Quito (Ecuador).
3. Mass Communication Institute at the University of Kakar (Senegal).

4. Mass Communication Institute at the University of Lebanon.
5. Mass Communication Institute at the University of the Philippines.
6. Mass Communication Institute at the University College, Nairobi (Kenya).

UNESCO also provides assistance to Member States for organizing specialized professional training in the various mass media.

For example, UNESCO collaborates with an existing national training institute in Asia in order (i) to provide regional training courses for future national training staff; (ii) to develop supporting material and training aids; (iii) to organize intensive short courses on specialized aspects of broadcasting; and (iv) to provide training specialists for assisting in the organization of training facilities on the national level, with a view to ensuring fuller use of the mass media for purposes of national development. Similar assistance is given to Latin America. In addition, UNESCO also assists the development of broadcasting in Africa through the provision of expert services.

Technical assistance may be provided to Member States, upon request and in accordance with normal procedures. As of December 1968, Afghanistan, Burma, Congo (Democratic Republic of), Philippines, and Tunisia were receiving technical assistance support. Activities of UNESCO are extensively covered in the Telecommission Report entitled "Communication and Development in the Seventies", prepared by F.L. Goodship, Communications Department, UNESCO.

PRE-INVESTMENT SURVEYS *

The action which the ITU has been carrying out for approximately two years in connection with pre-investment surveys answers a pressing need which has been felt by the new and developing countries themselves and consequently by the UNDP. We were therefore most gratified to note the remarks made by Mr. Paul Hoffman on this matter at the Seventh Session of the IACB held in Geneva last March when he told us that the UNDP attaches great importance to pre-investment activities for preparing a country to take advantage of rapid changes in science and technology.

More recently, the report which the Pearson Committee has just issued draws attention to the importance of this problem and offers pertinent suggestions for increasing the effectiveness of the efforts undertaken in this area by the specialized agencies of the United Nations.

The International Telecommunication Union, which more than ten years ago took the initiative of setting up Plan Committees at regional and world level, soon realized that its work was incomplete since in most cases it was not followed quickly enough by the execution of the projects which these plans entailed. We, therefore, concluded that, after the countries themselves had prepared integrated plans for the development of their national and international telecommunication networks, it was necessary to go one step further and conduct appropriate pre-investment surveys on the basis of these plans.

We, therefore, heartily welcomed the new policy of the UNDP to encourage such surveys to the maximum possible extent.

We have encountered many difficulties in carrying out our task, the most important of which are referred to in the Pearson Committee's report, and I shall not repeat here what was stressed so cogently by that Committee. I should, however, like to make a few points which were not included in the report for the simple reason that they concern telecommunications specifically.

First of all, I would recall that in all the studies of the economic situation of the developing countries that have been made emphasis is laid on the need to integrate these economies. One of the essential pre-conditions for such integration is the creation or development of an appropriate infrastructure, particularly in the fields of telecommunications, transport and power.

Apart from production factors, transport and communications are undoubtedly among the essential economic prerequisites for a real improvement of productivity and economic expansion leading to a significant improvement in the standard of living of the population.

This basic requirement, which is at the foundation of any technical assistance activity, has been stressed by many international personalities.

* Statement by Mr. M. Mili, Secretary-General of the ITU, at the Eighth Session of the Inter-Agency Consultative Board (IACB) - New York, 20 October 1969.

Unfortunately, many governments do not always give the necessary priority to telecommunications, so that the efforts undertaken on their behalf are greatly handicapped from the outset.

In many cases this is one of the reasons why it is impossible to attain the objectives fixed for certain projects affecting other sectors of human activity.

Another fact which has been brought home to us but which unfortunately has not always been sufficiently appreciated is that, since the part played by telecommunications in international life is constantly growing in importance, the planning of a national network, even with respect to remote rural areas, should take account of long-term objectives. In some cases, a national circuit may be destined to have an international function because it will form part of an international link, the necessity for which will become very apparent once certain conditions have been met.

This consideration is particularly important in that very often pretty much the same volume of investment is required in both cases.

Another factor to be considered is that the technical specifications for equipment often vary from one country to another. To ensure the integration of national networks in a coherent regional or world system, it is essential that the international standards established by the ITU, particularly in the fields of transmission and signalling, should be scrupulously respected.

Finally, in view of the ever more rapid strides that are being made in telecommunication techniques, it is hardly conceivable that a programme of development could be established without requiring, during the period of execution, some adjustments to take account of developments that have since occurred and of the extensions to which they will give rise in future. This certainly does not mean that the planning of equipment programmes has to be carried out in a vague fashion but rather that the pre-investment surveys should be as thorough as possible and that they should be followed rapidly by execution of the projects identified.

The ITU Plan Committees meet regularly every four years to evolve new integrated telecommunication plans for the region concerned. This period of time should be taken into consideration in executing the projects adopted. It is therefore most desirable that the following operations should be completed within the four-year period: planning, pre-investment survey and execution of the projects. Then the same cycle begins again with the same rhythm.

With regard to the pre-investment surveys for which the ITU is responsible, we consider that logically they should be continued beyond the stage of identifying the projects, that is, to the point of defining the technical characteristics and preparing specifications to enable the countries concerned to issue the invitations to tender for the execution of the projects.

Naturally, many countries are not in a position to make these pre-investment surveys themselves. In this case they call upon outside help, private, bilateral or multilateral.

Many firms of consultants offer their services for this work, while the administrations of friendly, more developed countries sponsor pre-investment surveys as a form of bilateral assistance.

We also note with great satisfaction that the World Bank is showing a growing interest in telecommunication projects, especially in Africa and Asia.

The regional banks are likewise interested in those projects.

In short, the importance of telecommunications is now recognized by many financing agencies, which augurs well for the success of the new development decade.

It goes without saying that the interest aroused by telecommunications among so large a number of agencies prepared to assist the developing countries demands some co-ordination to prevent duplication and waste of effort.

Co-ordination is equally essential to arrive at consistent decisions in planning the national and international networks.

To achieve this end it is natural that the bonds of co-ordination between bilateral and international assistance should be strengthened so far as possible.

But it is also advisable to co-ordinate international assistance itself by increased consultation among the organizations interested in the development of the telecommunication infrastructure of a particular country or region and by ensuring the systematic exchange between them of the relevant official documents.

The ITU, of course, is extremely interested in pre-investment surveys relating to telecommunications. As it is not a financing agency, its activity cannot extend to the ultimate stage at which the projects are executed. But it is conscious of the fact that, by closely co-operating with the UNDP, it has adequate resources for carrying pre-investment surveys, properly speaking, to their final conclusion in the best possible conditions.

Since October 1967, therefore, we have been conducting pre-investment surveys in Latin America in association with the Inter-American Development Bank which is the executing agency for the project.

In the ECAFE Region we shall begin a pre-investment survey for the entire telecommunication network in this major region of the world early in 1970.

Finally, since the middle of 1968, the ITU has been engaged in preparatory work with a view to conducting a pre-investment survey for the construction of the Pan-African telecommunication network. Our teams of experts have visited 38 African countries and are now drawing up the final reports which will be submitted in the form of a request to the Governing Council of the UNDP for the funds required for a more penetrating survey. This will enable us to graduate from the stage of proposals to the drafting of technical specifications for the projects to be implemented. In the interest of continuity, we hope that our request will be considered by the UNDP Governing Council at the earliest opportunity.

To conclude this subject of pre-investment surveys, I would point out that it is desirable for the establishment of certain international connections to be financed by the UNDP, as was the case of the Abidjan-Addis Ababa pilot project. This inter-African connection has been so successful that it constitutes a most impressive example of what the ITU can achieve in collaboration with the UNDP in the field of international telecommunications.

Another most important requirement to ensure that our activities on behalf of the new and developing countries are successful is the training of medium-grade supervisory staff.

Nothing will be served by building a modern telecommunication network if the country does not have at its command within the required time national staff able to ensure the normal operation, maintenance and repair of the network.

Our efforts are therefore directed towards the training of this type of personnel. We are particularly encouraged in these activities by the fact that the new and developing countries have shown that they are increasingly aware of the importance of this problem.

Our work is facilitated by the wholehearted support and understanding we receive from the UNDP and from the admirable men who serve as United Nations Resident Representatives in the countries we assist.

C O M M U N I C A T I O N

A N D

D E V E L O P M E N T

I N T H E

S E V E N T I E S

Frank L. Goodship
Paris, 1970

AUTHOR'S NOTE

Much of the statistical information and historical data contained in this paper has been drawn from publications of UNESCO. The opinions expressed however are the author's and not necessarily those of the Organization.

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COMMUNICATION AND DEVELOPMENT IN THE SEVENTIES

1. INTRODUCTION

Any study of communication has to begin by delimiting itself, since most human activities can be said to involve, or to be dependent upon communication flow. In fact, one contemporary British philosopher, Colin Cherry, defines all societies as "people in communication". This paper is concerned with the relationship of communication to development, which involves in turn the relationship between communication and change. In practice, wherever change is impending or has occurred in human society, there is bound to be a flow of communication. Our concern in fostering national and international development is to ensure that this communication flow is understood, and if possible, directed towards the processes of change.

The paper is primarily concerned with the processes of mass communication, especially in its electronic forms of radio and television. This is not to say that other forms of mass communication are unimportant; the press, the cinema, the paperback book are often very influential. But in the developing countries, radio and television - as immediate forms of communication - are most intimately concerned with social change and most readily applied to national development. Much of what is said about them here will, in any case, relate to other forms of mass communication, though with these the time-lag between communication and response will often be more prolonged.

A study of mass communication is also bound to consider the forms of interpersonal communication. The two are, in practice, not sharply distinguished one from the other. The existence of mass media is often

taken as an index of an advanced, literate and urbanized society; Lerner, for example, found high correlations between urbanization, literacy, media participation and political participation in 54 countries. Interpersonal communications are the traditional, fundamental forms (the Bazaar, the market place, the coffee house). But in reality, the mass media do not communicate directly with an audience of individuals - their communications are filtered, modified and re-transmitted by personal and group exchange. So, in order to estimate the potential and efficiency of mass communications, their social environment must be taken into account, and these findings built into all mass communication strategies.

(The modern interpersonal and "impersonal" media: the telephone, telegraph, facsimile and data transmission and reception are assumed to be an indispensable part of modern business and of urban organization. They are not, except insofar as they are mentioned as measures of comparative development and as elements in assigning communication priority, a part of this study.)

Consequently, this paper has five separate objectives. It will first of all consider the function of mass communications in the developing world. Second, it will summarize the present state of communications development in the emergent countries. Third, it will describe the major agencies - both national and international - which are associated with communications development. Fourth, it will try to estimate the needs of these countries in the communications field, and assign to these needs some scale of priorities. Finally, it will make some proposals as to how the most urgent needs can be met, and how both national and international agencies can best assist in the process.

2. COMMUNICATIONS AND DEVELOPMENT

In 1964, Max F. Millikan, the late M.I.T. economist and administrator, had this to say about the impact of communication on the developing world:

"Of all the technological changes which have been sweeping through the traditional societies of the underdeveloped world in the last decade - changes in the production of energy, in the processes of agriculture, in the techniques of industry, in the nature of weaponry - the most fundamental and pervasive in their effects on human society have been the changes in communication."

It can be taken as argued, and agreed by now that the mass media have a significant contribution to make to national development. Their importance lies, demonstrably, in their multiplying factor - their time/cost efficiency in moving information. The electronic media have a residual advantage in their immediacy - they can address a large population simultaneously. Admittedly, they have a basic weakness in their lack of feedback system - they cannot readily carry on a dialogue and this limits their range of responses - but even here, experiments are being carried out to help improve feedback arrangements.

It may be debated how much the media have achieved in accelerating development or what their degree of efficiency has been, but few people would now dispute that they have achieved a considerable amount. The contribution of radio to development in Australia and Canada is widely recognized and programmes such as Canada's "Farm Forum" continue to be emmulated in a growing number of newly developing countries. There is a good deal of modern scientific evidence of the development role of the mass media embodied in the research of such social scientists as Lerner and Schramm and further support in the practical programme of the international agencies.

In 1946, when the United Nations Educational, Scientific and Cultural Organization was founded, it was given explicit responsibility for promoting the use of mass communication to further the Organization's objectives; in 1958, the United Nations General Assembly called for a "programme of concrete action" to build up mass media in developing countries and followed this up, in 1962, by urging governments to provide in their economic plans for the development of information media. Wilbur Schramm summarized the position in 1963, when he was commissioned to write "Mass Media and National Development" for UNESCO - a complete review of the situation at that time.

In summary, the role of the broadcast media in supporting national development can be divided into three main areas.

There is firstly their generalized role in providing information, entertainment and news within the context of regular public broadcasting. Schramm has outlined the main processes by which change is achieved at the economic, political and social levels; a populace has to become aware of a need which is not satisfied by existing customs and behaviour, so that it is, impelled to invent or borrow behaviour which comes closer to meeting this need. Traditionally, changes of such magnitude have occurred only across a considerable span of time, as a result of many complex social interactions. The role of the media in accelerating change is in introducing innovation, widening horizons and imparting special skills, all of which help to engender a receptive climate from which change can follow. Naturally, the media cannot do this on their own - they need to be part of an integrated approach to development, which allows for the desires and demands which they stimulate to be followed up and satisfied. But their role within this system is an important one; they can focus attention on specific issues, provide a body of information about them and arouse interest. They can confer status on particular individuals and policies, or help to crystallize and canalize attitudes.

In this broad context, virtually all the transmissions of a radio or of a television system may be influential. The impact on an audience is total, because it is largely unstructured; it is attitudes en masse which are being affected. Therefore, the professional skills of the broadcaster become especially important, since the way in which information is imparted and received will depend to a very large extent on the way in which it is organized.

Radio and television can also focus down on more specific tasks. They can be used, for example, as instructional tools - as part of an educational system, in which a number of media (both mass and personalized) combined to teach particular skills, such as reading and writing. Here, the role of the media is more confined, and their effects are more measurable; they are being used for circumscribed tasks. Possibly for this reason, ETV (educational television) is experiencing growing success in the developing countries - often greater than the developed West. It makes considerable demands on broadcasting personnel, since more production and educational skills are called for, as well as a high degree of co-operation between broadcasting and educational authorities.

There is also an intermediate position between the two approaches which is growing in importance. This is in the use of the media for what we can call, broadly, social education - as an agent for transmitting information about family planning, agricultural and industrial techniques, or as a component in strategies of community development, attempts to improve the status of women, industrial training and so on. With this approach, the media are used partly for entertainment, partly for motivation and persuasion; there is relatively little in the way of direct instruction and what there is, is limited, both in duration and scope. A balance of this kind is particularly difficult to find, and usually comes only after repeated experiment. Many of the attempts made to date, have been either over-didactic, or over-trivial.

In theory, then the functions of the media are clear cut, and fairly easily distinguishable. In practice, however, they may often become blurred, for historical or organizational reasons. The way in which a country's broadcasting services are structured is bound to affect the ways in which it makes use of mass media; at times specific applications of radio and television may appear to be in the hands of inappropriate agencies. A few examples should clarify some of the dangers and difficulties which can arise.

The generalized role of the media is the simplest to appreciate; it is the closest in character to broadcasting in the developed West. However, both the control of broadcasting and its programming are differently structured in the emergent world. There is a great diversity in organizational patterns, ranging from government controlled enterprises, through the independent corporation, to the purely commercial station. In many cases, the prevailing local pattern is a mix of two or more of these forms - usually deriving from political and historical traditions. Latin America adheres to the privately-owned commercial pattern, as do the Philippines; most Asian and African countries veer towards government control, and although the public corporations are few (they do, after all, demand a particular strength of purpose from any government which is being asked to abdicate from direct supervision of a major information agency) they can still be found in the developing world - for example, in Ceylon, in Cyprus or in Turkey.

A mix of commercial broadcasting with government control is an especially popular form; it has the advantage of bringing in revenue, while still allowing for state information and propaganda services. In most cases, however, governments are reluctant to withdraw entirely from the scene, in favour either of public corporations or of commercial enterprises; they reserve powers for themselves, even though they do not always choose to exercise them. Consequently, the loudspeakers and television screens

of developing countries usually transmit a good deal of material which is explicitly propagandist or "nation-building" in tone; news broadcasts are frequently a mixture of objective and subjective comment, with predominantly local, even parochial emphasis. Such indigenous material often stands out very sharply when it is set against a regular background of imported American or European entertainment films.

The objectives of radio and television when used for instructional broadcasting are more defined but throughout the developing world two separate organizational models are found, broadly speaking, the European, and the American. In Europe, educational radio and television have normally been the creations of the broadcasting organizations; programmes have traditionally been designed for schools as items of enrichment, supplementary rather than essential to institutional life. In the United States, the pattern for instructional television has been one of direct teaching, created by and for educators, built explicitly into the school or college curriculum but often loosely visualized as a piece of television. In fact, in the East, the two traditions have now come much closer together, as a result of an emphasis upon educational innovation and some degree of interchange between the two of education and broadcasting. The differences are sometimes marked, however, in the developing world, where educational broadcasts may be (as in Ghana) in the hands of the broadcasters, or (as in Singapore) in the hands of an educational authority.

Often, broadcasting tradition can be in conflict with the objectives of instructional television in the emergent world. Television or radio as enrichment, as pieces of supplementary audio-visual decoration, are clearly out of the range of a developing country; its educational problems are likely to be fundamental, and a medium as expensive as television is unlikely to be justified unless it has something major to contribute to

educational development. In virtually all such countries, educational television exists to instruct - to help cover a deficit of qualified teachers, or to introduce new teaching methods and models to a substantial proportion of schools. But, depending upon the tradition from which the ETV service emerged, there is a difference in style, and often in utilization, between programmes.

Instructional television can do two things; it can teach a large number of pupils simultaneously, and it can also offer a range of illustration in the course of this teaching which is beyond the scope of the conventional classroom. Gradually both strengths are being drawn upon, but at the moment, a programme in American Samoa often looks very different (in terms of organization, visualization and so on) from a programme in Malta or El Salvador. The gap is being closed as more teachers learn broadcasting skills and vice-versa but at the moment few areas of programming are satisfactory in both instructional and audio-visual terms.

The third role of the media, as a force in social development, is less easy to analyse because it is so much more recent a phenomenon. In the UAR, for example, television and radio broadcasts are addressed to groups of industrial or agricultural workers for group viewing and listening; they are mostly magazine type programmes, with a good proportion of items of general interest but also containing information about new farming techniques or industrial processes. Farm radio broadcasts in India are of much the same order. There is a growing commitment to using broadcasting for development of this kind, and it is an area which the German Government has recently approached, in a bilateral aid programme based in Singapore but intended to help develop adult education programming

throughout South-East Asia. Perhaps the major difficulty faced here is one of programme utilization. There is rarely a satisfactory network of groups or associations within a developing country to which programmes can be addressed for group viewing or listening; out-of-school education has not reached this degree of systemization, and in consequence a media programme is often limited in its impact.

All three development functions of radio and television have been applied for some years now, with varying degrees of success. Both national and international agencies have been involved in each area, sometimes as partners, more often independently. At the national level individual governments have tended to develop arrangements of their own, entering into bilateral agreements with specific countries. At the international level, the main agencies concerned have been those of the United Nations family - in particular, UNESCO. It is a field in which, while a good deal has been achieved, it has often been realized in a highly fragmented way, and different agencies and schemes have sometimes duplicated or cut across each other's boundaries. Perhaps, this is inevitable in the early stages of development; certainly there is a current impetus towards cooperative ventures at a regional level, which should help improve efficiency.

Enough should have been said by now to suggest that any programme for the use of radio and television in the interests of development needs to take account of two separate elements. First, it has to be quite clear in its objectives - in the specific application of the media which it is proposing, and in its expectations. But equally important, it has to take account of existing patterns of broadcasting organization, and within this context, to be completely realistic in its prescriptions.

Consequently, the next section of this paper will be devoted to a review of the current situation in broadcasting development, before going on to establish needs and priorities for the future. It will look at the position in the developing countries themselves, at the contributions of the major nations concerned in the field, and at the role of both regional and international organizations.

3. THE PRESENT POSITION

Even in the context of the greatest period of industrial growth in world history, for communication one decade could well be described as the, "spectacular Sixties". In ten years, more radio and television equipment - production, transmission, distribution and reception - was produced and used than in the entire period since Marconi's discoveries.

The first Development Decade was, above all, the transistor decade. The number of radio receivers - since the early 60's almost entirely "all-transistor" - has increased by 100, 120 and 150 percent in South America, Africa and Asia respectively.

Keeping pace with the transistor revolution, the number of radio broadcasting transmitters in the world has more than doubled.

Television was a phenomenon of the Sixties in most developing countries. In Africa there were four countries with television in 1960 and 22 by 1967. In Asia during the same period, the number rose from 12 to 25, and by the end of the decade only Afganistan, Burma, Ceylon and Nepal did not boast at least one television transmitter.

It was in the Sixties too, that the last physical frontier to universal communication was dramatically crossed; the launching of a communication satellite. By 1962, its attendant developments were to demonstrate the possibility of a system of communication satellites which could transmit a reliable broadband (sound and vision) signal to every corner of the earth. Unfortunately, however, for much of the world the Sixties did not quite add up to the communications millenium.

In 1970, seventy percent of the world's people had no access to news or information other than by the "word-of-mouth" tradition of the village. For them a "low cost" receiver is still a term without meaning and an ambition with little hope of fulfillment. For their governments the communication satellite now seems to be but one more demonstration of technology's capacity to produce tools ideally suited to the needs of countries which can least afford them.

A brief look at some representative developing countries will give more precise dimensions to the problems of communication and, perhaps, some clues to their solution.

INDIA

The world's largest democratic nation embodies all the problems of development in a scale commensurate with its size; in a phrase, beyond comprehension to most other nations.

And despite enormous intellectual capacity, abundant technical skills and strenuous efforts to overcome exchange problems through development of local industry, India can count less than one percent of its population as radio owners. Large areas of the country - although relatively lightly populated, have no reliable radio reception at all. There is one television transmitter and 6,000 receivers.

Under its fourth Five Year Plan, India intends to spend \$700 million on communication development of which \$620 million will go to telecommunication. The present 1.1 million telephones will be augmented by a further 760,000. Microwave links (to which Canadian aid has recently contributed) will be extended by over 4,500 miles.

Over and above the telecommunications expenditure, the Fourth Plan has provision for \$53 million in radio development. Most of this sum will be spent on medium-wave transmitters to extend and improve radio coverage

for up to 80 percent of the population.

Commercial broadcasting which was begun on an experimental basis in 1968 will now be extended on a regional basis.

Receiver and component production in India is controlled by the Ministry of Industries, Directorate General of Technical Development, but is carried on by more than twenty private and government firms. All components for transistor and tube receivers are made in the country and imports are restricted to raw materials and a few sub-miniature parts. Production output is by quota and preference is given to low-cost models. A million receivers retailing for less than \$10 each is within the capacity of existing plants.

Television was started in India in 1959 with a small, experimental station in New Delhi. The second station is scheduled to open - in Bombay - over 10 years later. During the remainder of the fourth Five-Year Plan stations are planned for Srinagar, Calcutta, Madras and Kanpur-Lucknow. Delhi's station will be expended and Bombay's signal will be relayed to a transmitter in Poona.

Provision for a station to be associated with the ITV-UNDP communications satellite training centre in Ahmedabad is also made under the extension of this engineering training project.

The six stations alone are budgeted for an investment of \$8.5 million with a foreign exchange component of \$3.5 million.

In order to meet the manpower needs of the television expansion programme a Television Production and Technical Operations Training Centre is being established in Poona to turn out 200 qualified men and women per year in all television categories but engineering. This scheme is under UNDP Special Fund assistance in cooperation with UNESCO.

Television receiver production licenses are presently held by only a few plants. Principal of these is the State-owned Bharat Electronics Ltd. Picture tubes are being manufactured by Bharat in collaboration with NEC, Japan. The only licensed design at the moment is a product of the Central Electronics Engineering Research Institute, Pilani. At the end of 1969, a 23 inch receiver cost 1,900 rupees (\$250) exclusive of local taxes. Plans were announced, however, for an all solid-state receiver which would minimize power requirements for reception in non-electrified areas.

As early as 1965 the idea of a communication satellite for India was discussed in international meetings. By 1968, two independent study teams concluded that a satellite could not only solve most of India's major national communication problems but it could do it in a fifth of the time and half of the cost of any alternative system.

It is not the intention of this paper to enter into the debate which preceded the signing of the 1969 NASA/India scheme to conduct a one-year experiment with the ATS-7 satellite. The satellite has now been delayed from 1972 to 1975 but the relative merits of an instantaneous national scheme over a build-up on a regional basis, may cease to be an issue as a result. The more basic problems facing Indian communications development are those which are endemic to the sub-continent: a huge population to be served, 15 major languages to contend with and a chronic shortage of foreign exchange.

While the transmission and reception problems of broadcasting are inseparable, it is apparent that almost any solution to the first will precede a satisfactory answer to the second. Improved medium wave coverage will mean that radio receivers can be further standardized and costs of production reduced.

Failing another technological breakthrough equivalent to the transistor, the good five-dollar radio receiver is feasible but a lower price unlikely.

For a substantial part of the Indian population today, this still leaves a personal receiver outside the realm of hope.

For radios to be as common in India as they are in Japan a significant rise in India's living standard will be necessary. Alternatively, the Government would have to give a whole new priority to radio production and distribution.

Television sets except among the wealthiest classes will continue to be an institutional and community instrument for the foreseeable future.

Meanwhile, the steady spread of wide-band microwave and coaxial cable, increased emphasis on industrial partnerships to produce good quality broadcasting equipment, and a focus on two or three competing research institutions seems like the best road to the communication development.

Programme manpower requirements should be efficiently met when the TV training centre is completed in Poona. If this training systematically reinforces the contact between television producers and the Indian people then the best possibilities of communication will be realized.

Malaysia

Radio broadcasting was begun in Malaysia in 1930 when it was the British Protectorate of Malaya. Television was started under a crash programme of Canadian technical assistance in time for the independence day celebration of 1963. Radio Malaysia employs over 1,500 people to produce 400 hours per week in a total of 16 languages but principally in the Malaysian language.

A staff of over 500 produces nearly 80 hours of television on two networks from the largest and most modern television studios in Asia, outside of Japan (CIDA provided the design, building and engineering supervision costs).

All of West Malaysia is covered by radio - mostly on medium wave

and the greater part of West Malaysia is covered by television carried by an extensive microwave system. East Malaysia has radio in all the major centres by medium, shortwave or FM. Television is planned for Sabah in the near future with Sarawak to follow. Colour television is being considered for West Malaysia. In 1968, there were nearly half a million licensed radio receivers and 120,000 television sets. Both figures may be as much as 50 per cent under today's real totals.

To summarize: by international standards, Malaysia is a country rich in broadcasting resources. Much remains to be done in the East but rapid progress now is making up for the past neglects. The weaknesses of radio - and particularly, television in Malaysia, cannot be attributed to hardware. In much of the radio service and most of the television services, however, it is the "software" which is found wanting. Programming cannot be said to reflect a strongly Malaysian character and many of the educative possibilities of the media are being neglected. This is a situation which will soon be changed.

At the beginning of 1971, Malaysia will open its National Broadcasting Training Centre. The purpose of this Centre is to make training in all categories a systematic part of the broadcasting operation; to develop the skilled staff necessary for expansion in East Malaysia, to raise the standard of existing operations and, in the long run, to improve broadcasting's capacity to answer Malaysian needs.

The National Centre is also foreseen as the nucleus of the Asian Broadcasting Training Institute. This long-desired goal of the Asian Broadcasting Union will shortly have a full-time planner - provided under UNDP-UNESCO technical assistance. The background and purpose of the National Centre are discussed in a later part of this paper.

Given the strength of its existing technical infrastructure, the plans of expansion and systematic development of its personnel, Malaysia Radio and Television may well become examples for other mass communication organizations. The Ministry of Telecommunication's Training Centre in Kuala Lumpur, established in cooperation with UNDP/ITU is already a model of its kind.

Malaysia imports all its communication hardware needs, including radio and television receivers. A high degree of specialization would evidently be necessary, however, to warrant the establishment of a local electronics industry. Much more densely populated and essentially non-agricultural areas of Asia, Hong Kong, Singapore, etc. seems more suited to the manufacturing role of this field.

Continuing development of East Malaysia's communication infrastructure is now the priority. Political stability and favourable markets for its principal export products are the background against which Malaysia hopes to meet its main educational and social challenges. Further technical and professional training focussed on educational exploitation of the media is the principal requirement.

While selecting India and Malaysia as representative of Asia, the author must acknowledge that while common problems of communication development exist in Asia, there are obviously more contrasting details than can possibly be listed in a paper of this nature. Indonesia, for example, is a study in contrasts; an archipelago of 3000 islands, 300 miles in length; a population of 60 million in Java and a handful in West Iran; an incomplete national radio network competing with over 100 provincial stations and over 500 amateur stations running on a part-time commercial basis.

systematically in education. A start is being made and any amount of assistance can be absorbed. With the consortium approach now initiated, this assistance can be best assured of positive results.

AFRICA

Where it all began. Wire-less, telecommunication; perhaps more than a million years ago, in a language which grew so sophisticated that hundreds, perhaps thousands of years before the telegraph, it would make the primitive efforts of Morse seem retrogressive.

The drums of Africa still talk across a retreating band of forest and savannah where the microwave and even the cable pairs have not penetrated. And, as short haul carriers, the drums have much to commend them in economy and efficiency.

The oldest radio transmitter in Africa was built in 1926, soon after the first in Europe and America. After this beginning in Kenya however, communication made little progress until the last decade and all lines led to and from London or Paris. Broadcasting in the Gold Coast was the most developed before independence, anticipating the rapid expansion of the media in Ghana.

Today, transmitters, microwave networks, radio and television studios and receiver assembly plants can be found - in various degrees of concentration in all corners of the continent. But progress is relative; there are still less than five radio receivers per 100 people, taking the continent as a whole. Television reception except in U.A.R., has not reached a stage of penetration where it can be called an important communication influence. Ghana alone, among south-of-the-Sahara countries has a national TV network.

Meanwhile, in Côte d'Ivoire one of the most comprehensive educational use of television yet attempted, is about to come into effect. Under the aegis of UNESCO, the World Bank, Canada, and other bilateral agencies, television will take up much of the main burden of elementary education. Only in little American Samoa, a laboratory case by most standards, has television attempted to produce such a sweeping educational reform. Operational responsibility for the project, a major part of the equipment cost and practically all the technical assistance personnel are being provided by France.

Most of the problems associated with the spread and effective use of communication in Africa, however, are more directly economic. Equipment is costly, installation often difficult and maintenance standards are often low. Not surprisingly, technicians whose economic outlook does not include a telephone or television set are poorly motivated to care for either. This is not to suggest that the training of African technicians is a futile task; on the contrary. The Ghana Telecommunications School, for example, the Ghana Broadcasting Engineering Training School, and the CIDA sponsored Trades Training Centre in Accra, are all full, flourishing and making an invaluable contribution to the country's communication systems. But technical skills tend to be under-rated in Ghana as they are in so many countries where the education systems and technology did not grow out of the culture but were implanted by foreign administration. Consequently,

a graduate engineer, whose theoretical knowledge may be impeccable but whose ability to repair a telephone or television set is nil, enjoys a much higher standard of living - hence a telephone and television set - than the man who must keep them running. The evident injustice is more likely to be felt in a country where social mobility is a new phenomena which is the case in much of Africa.

The creation of a new class of "super technicians" is probably the best way to insure that good candidates will be attracted to the career, that morale will be maintained and that high standards of efficiency will be met in communication and in other technological fields. Such socio-economic adjustments have rarely been planned although governments, as the principal employers and planners have the possibility of making technology more efficient than it has been so far in Africa - and to accelerate development in the process.

The introduction of science and technology at an early stage of education would also help to offset some of the present academic bias and produce graduates more susceptible to technical training. The creation of communication clubs in secondary schools would provide the opportunity for an early exposure to communication technology and programming concepts. The school club idea would also lend itself well to bilateral technical assistance and if there was a connection between schools in the bilaterally cooperating countries an extra dimension of constructive participation would be added.

Tanzania is one of the African countries to make a decision against television although Guinea, Mali, Gabon, Chad, Togo, Dahomey and some of the other smaller states do not yet have TV. Tanzania's policy is based on the proposition that the country could not afford a full network and would not be able to produce much of its own programming. Both assumptions are supported by the great majority of television operations in Africa. Only Algeria, Ghana, Morocco, UAR, Uganda and Zambia have major networks while Kenya, Nigeria, Libya and

Côte d'Ivoire have partial networks; the rest are one, or at most, two-station operations. No country in tropical Africa produces half of its own programmes (although Ghana once produced 80 percent) and some produce as little as 10 percent.

Systematic development of local staff, the only basis upon which indigenous production can hope to expand, is not yet a feature of African broadcasting. Only Ghana, Kenya, Libya, Nigeria and UAR have full-time training centres although Algeria expects to begin a major educational radio-television training scheme soon and Côte d'Ivoire, Ethiopia and Uganda have regular part-time training. The Kenya Institute of Mass Communication is the only plant in Africa designed from the beginning for radio and television training.

One new feature of communication in Africa which is bound to have an impact in the future is the provision of university courses leading to a communication degree. The Universities of Senegal, Nigeria and recently, Kenya offer undergraduate courses, the first and last emphasizing journalism - broadcasting as well as press - and the second is research oriented with a strong bias toward radio.

International links within Africa are one of the great areas of neglect in the communication world. A telephone call from Lagos to Accra must still pass through London and a call from Abijan to Dakar must route through Paris. An east-west continental link was inaugurated only in 1969. Under a UNDP Special Fund project, however, the first full-scale survey for African telecommunications will begin shortly.

Another UN agency, UNIDO hopes to promote receiver production on a regional basis in Africa. UAR, Algeria, Côte d'Ivoire, Ghana, Kenya, Malawi and Burundi all boast receiver production plants but only in the UAR, is there component manufacturing. The UNIDO Plan is aimed at producing a design suited to African needs (which vary but have important common factors). The production of a different range of components would then be assigned

to each co-operating country with final assembly taking place in one country or divided among all the participants.

Also on the regional level there are new initiatives for co-operation in communication training. The communication course already mentioned in Senegal (CIDA assisted) regularly draws students from the francophone West African countries. The University of Kenya course serves students from East Africa. The Kenya Radio-TV Institute is also designed for East African participation. Assisted by a UNESCO regional programme the Institute of Communication of Lagos University is planning a regional management course for West African broadcasters, early in 1970. It is hoped that Lagos will eventually become the base of a permanent radio and television engineering and programme training centre for the sub-region and participation by bilateral aid sources is anticipated. URTNA, the African broadcasting union, has sponsored several seminars and courses and the Commonwealth Broadcasting Conference has recently completed its first regional course - held in Ghana with assistance from CIDA and ODM. The Arab States Broadcasting Union has plans for a co-operative course in 1971 and hopes for a permanent regional training institute in Jordan. Algeria's planned ETV training institute is foreseen as a regional centre for the Magreb.

This brief look at African communication inevitably excludes much; external broadcasting for example. External broadcasting is of marginal value in any contest and a great consumer of energy - human and electrical, to the benefits accrued. The omission here is not an oversight. This review has, however, tried to stress the positive without ignoring the fact that problems are abundant and formidable. The great barrier to communication in Africa is language; the more so since the possibilities of a common language evolving - such as took place in East Africa with Swahili - has now been virtually eliminated. The mass media now, ironically, reinforce the polarization of non-communication between the two great imported languages.

Latin America and the Caribbean

If there is one word to describe radio and television in Latin America, the word is "saturation". In Mexico (1964 figures) there are 395 AM medium-wave commercial radio stations, 15 shortwave and 15 FM commercial and 27 commercial television stations - the latter largely owned by one corporation. There are also three medium wave, 10 shortwave, and one television station operated by various state governments, ministries and universities. The Mexican example is typical of broadcasting from Mexicali to Tierra del Fuego.

In this tower of Babel and hard-sell, communication is largely a subliminal experience and the few achievements in public service broadcasting emerge as brave if plaintive voices.

In recent years, there have been fruitful experiments in the use of television for literacy and primary education but few of these have been sustained. The example of Brazilian footballer Pele as a literacy-by-television promoter was once accepted as a model for the medium. Colombia, assisted by the Ford Foundation and a large contingent of Peace Corps has used television extensively as primary school curriculum reform and direct-teaching medium. Also with American assistance, El Salvador in 1969 launched a major educational television scheme. In Peru, notably at Arequipa, there has been long association of the universities with educational use of the media. As in Mexico and Chile, it is typical of Latin American broadcasting that responsibilities for educational and public service use of media should be left to university owned and operated stations. None of them is sufficiently well endowed to do the job effectively.

Hope for sweeping reform now lies, figuratively speaking, 22,300 miles out in space. Brazil, with the help of a UNESCO/ITU study team has already taken a detailed look at the use of a satellite to implement telecommunication, radio and television on a national scale. In 1970 it is hoped to begin a two-year study of the educational and communication potentialities of a regionally-shared satellite in all the Andean countries. This would also be a UNESCO/ITU study and its depth and regional concept would make it by far the largest yet undertaken.

When a Jamaican broadcaster was once asked by a Commonwealth colleague why there was not greater co-operation among the English-speaking islands of the Caribbean, his reply provided a picturesque geography lesson. "I don't know man; why isn't there greater co-operation between Jersey and Malta?" The physical reality of Caribbean communication was brought home again in the 1967 CBC Feasibility Study; the Caribbean is a vast area and most of it is water, ergo the cost of a wide-band link throughout the Caribbean is prohibitive.

At the end of 1968, UNESCO sent a survey mission to the Caribbean to ascertain the possibility for regional co-operation in news and broadcasting exchanges. In June 1970, one of the principal recommendations of the mission's report was implemented and the Caribbean Broadcasting Union came into being. It is clear that the broadcasters of the West Indies mean to promote a regional perspective; to build under CARIFTA, the sense of common purpose which has eluded the Caribbean throughout its history. It is apparent too that this will be done without outside help, if at all possible. The Caribbean's largest island is, however, another matter.

Cuba had one of the first colour television stations in the world. That was 11 years ago. Today, Cuba concentrates the limited foreign exchange available for broadcasting into keeping a monochrome service going and building up educational television. With UNICEF financial assistance a Canadian firm is now installing a cable distribution TV system in the major teacher training schools near Havana. Larger schemes in the east of the Island are also planned.

Regional Associations

More than 100 years ago the first regional association in telecommunication was formed in Europe. Today the International Telecommunication Union has four permanent organs, and 120 member states around the world. The oldest broadcasting Union, the O.I.R.T. was launched in 1946. The youngest, the C.B.U. was formed in mid 1970.

Their purpose is to provide a forum for exchange of information, ideas and programmes and to act as a unified voice in international forums affecting their regional interests. Apart from the ITU which is concerned solely with technical matters at the international level and the International Broadcasting Institute which is a private members' organization interested largely in research, there is no international broadcasting association to which all or a group of the Union members belong. The feeling among most broadcasters is that the ITU and UNESCO serve all the international purposes of broadcasting which are necessary at this time.

The value of the regional associations is proven by their existence but it would not be a fruitful exercise within the context of this paper to go into a detailed background or their history, objectives, etc. They are noted as follows, chronologically with their founding dates. A short statement of their principal activity at the present is included.

The International Television and Radio Organization (OIRT) is the union of Eastern European broadcasters with headquarters in Prague. Its chief regular activity is Intervision, the Eastern version of Eurovision with which it exchanges some programmes. It also negotiates for satellite hook-ups through Eurovision. OIRT is an associate member of URTNA.

European Broadcasting Union has 25 members in Europe and 30 associate members of which the CBC is one of the oldest. Its largest single international activity is as principal organizer of a world-wide educational broadcasting conference every four years. The next is scheduled for Mexico in 1971.

Union des Organizations Radiodiffusion et Television National d'Afrique (URTNA) was founded in 1962 and has organized a few activities outside of its annual meeting. It maintains an administrative headquarters in Dakar and a monitoring centre in Mali. The three working languages of the Union are Arabic, English and French. Some of its members also belong to the EBU, others to the Arab States Broadcasting Union.

Asian Broadcasting Union (ABU) was formed in 1964, has 22 members ranging in size from NHK, Japan to the Tonga Broadcasting Commission. Twenty associate members include the CBC and the major American commercial networks. The ABU maintains an engineering and technical headquarters in Tokyo, publishes a regular news letter and technical review. Its main objective now is the building of a regional training centre in Malaysia.

The Inter-American Broadcasting Association unlike the ABU does not represent national organizations but commercial broadcasters in the USA and Latin America. Its objectives are primarily to promote free enterprise.

The Arab States Broadcasting Union was founded in 1970 as part of the Arab League. It has plans for programme exchange, seminars and a training centre in Aman.

Caribbean Broadcasting Union was also launched in 1970 with the principal aim of promoting a regular exchange of programmes and personnel in the region.

Commonwealth Broadcasting Conference is in fact the oldest of all the associations having first met in 1945. But it is not a regional association and not a legal entity like the Unions. Only Commonwealth members (37) attend the Conference (each two years) and there are no associate memberships or observers. The one-man secretariat is in London. The Conference has emphasized training as its main substantive activity and it recently launched its first regional course in Ghana.

Community of French Language Programmes organizes programme exchanges among French language broadcasters (including CBC) and gives an annual prize for the best dramatic work.

International Catholic Association for Radio and Television and the World Association for Christian Communication are not regional in the geographic sense but they have been active collaborators in training and jointly sponsor a centre for broadcasting training in Cameroon.

These then are the principal associations representing the broadcasting media. They have each, in their way, contributed to the advancement of radio and television and helped to promote a sense of broadcasting's mission to serve the public good. With the exception of the EBU it cannot be said that any of the associations are wealthy or capable of the training programmes, co-productions, engineering development projects to which they would aspire.

The Unions - and in this respect the ABU is perhaps the strongest - also demonstrate the capacity for fruitful cooperation among developing countries. The pages following discuss some of the principal contributors to bilateral assistance in communication. It seems an appropriate juncture to draw attention to the potential for a major breakthrough in communication if all or several of these contributors joined the unions in building and supporting a communication development centre in each of the regions.

United Kingdom

The United Kingdom has the longest history of providing assistance for broadcasting projects, through the activities of the BBC, which extend back to the pre-war period. From its pioneer days in the thirties, the BBC acted as a source of advice and training for countries entering broadcasting for the first time; it also regularly accepted overseas trainees for working attachments and encouraged them to join its domestic training courses whenever places were available. At the other end of the scale, the BBC was frequently involved in the setting up of new radio stations in colonial territories (beginning with Nigeria in 1927) and many existing services still retain the BBC's organizational imprint.

Over the last decade, the UK's response to broadcast development has inevitably become less paternalistic, and there is far more coordination between the agencies involved. The BBC maintains an overseas training programme (with the backing of the Ministry of Overseas Development) and it has a special training studio and supporting staff in London to deal with overseas television trainees. Engineering students are accepted for domestic engineering courses, run at the BBC's Engineering Training School in Evesham.

The BBC is equally active in the field of secondments. Production and engineering staff are regularly assigned to overseas establishments as part of the UK's aid programme and have been heavily involved, in recent years, with broadcasting development in such countries as Libya, Turkey, Jordan, Guyana, Singapore and Malaysia, sometimes providing in-service assistance and sometimes helping to develop (as in Malaysia) specialized training schools. Commonwealth cooperation is also preserved through the Commonwealth Broadcasting Conference.

The reputation of the BBC is well-known and has at times approached a mystique. Other countries have attempted to emulate its organizational structure as well as its production and engineering methods. But the BBC has ceased, in the last decade, to act as of divine right in the broadcasting field; instead it has regulated its assistance and advisory services within the general context of UK technical assistance. Assistance is spread as wide as finances allow and not, as with France, generally confined to ex-colonial territories.

British technical assistance in the broadcasting field is not, however, confined to the BBC. A number of bilateral aid programmes have provided broadcasting equipment (limited - as usual - to items of British manufacture); recent examples are the provision of studio equipment to Malaysia under a Special Aid programme, to help create a new National Broadcasting Training Centre, and to the Institute of Mass Communication, University of the Philippines.

In the field of educational (instructional) television, the UK has operated through a separate agency - the Centre for Educational Television (Development) Overseas. Since the early sixties, this centre has provided regular training courses for ETV producers, and marketed low-cost programme materials for new stations, in the form of 'kits' which can be adapted to suit local educational requirements. It has also produced a considerable series of training films describing production techniques and provided an information service, as well as an international magazine, "Educational Television International". Of equal importance has been the secondment of experts to help develop particular educational television services; training courses have been mounted in many parts of the world (South-East Asia, the Middle East, Latin America) and consultants have been attached, for periods of up to two years, to ETV services in such countries as Ethiopia, Ghana, Jordan and Singapore.

In the UK, assistance to broadcasters is now centralized within the Ministry of Overseas Development (itself a relatively new Ministry, set up to integrate aid programmes in general). The BBC acts as an agent for the Ministry in general broadcasting affairs; in the field of educational broadcasting, a new body, the Centre for Educational Development Overseas (formed through an amalgamation of CETO with OVAC and CREDO - other bodies concerned with overseas visual aids programmes and curriculum development schemes) now spans the whole field of educational technology. Since the Ministry of Overseas Development is the focal point in the UK for relations with UNESCO and the BBC is a member of the European Broadcasting Union and an associate member of the Asian Broadcasting Union, as well as the prime mover in the Commonwealth Broadcasting Conference, Britain is well placed for correlating its bilateral programmes with regional and international developments.

Finally, technical assistance, in the broadcasting field, is not confined to government or quasi-government organizations. Manufacturers of technical equipment have often (sometimes through necessity) involved themselves in training schemes and planning operations for broadcasting, as a kind of sales incentive and some commercial organizations have entered the field in more fundamental ways. Grandad Television, for example, was one of the first companies to develop television in Africa, and the Thomson Organization, which has broadcasting as well as newspaper interests, runs - through the independent Thomson Foundation - a training establishment in Glasgow for both production and engineering personnel, as well as mounting short-term training courses in such areas as Pakistan and Latin America.

France

Like Britain, France became involved in the development of communication infrastructures abroad as a result of being a colonial power when telecommunication - and particularly radio - was first introduced.

Unlike Britain today, however, French technical assistance in communication is limited almost exclusively to former French colonies. Language is, of course, the main reason for this limitation.

Since the beginning of radio in the French colonies (to all intents this means Africa and Madagascar) communication has been the responsibility of an agency of Government. Before the Second World War when all stations in France were commercial, SORAFOM was the organization entrusted with the equipping of local radio stations in the colonies and also with the provision of programmes. Some indigenous staff was trained.

After independence was granted to France's African states, SORAFOM was replaced by the Office of Cooperation for Radio in Africa - OCORA - an agency of the Foreign Ministry. Subsequently, OCORA was moved to the ORTF.

In the earlier period - even post-independence - the radio stations were manned almost entirely by French personnel and much of the programming emanated from Paris. African staffs were developed, however, through a regular training programme in Paris and extensive post-graduate experience for radio engineers.

Among the francophone countries of West Africa, only Côte d'Ivoire has a substantial television operation. French technical assistance has played a major part in its beginnings, however, and more recently, France has joined with the World Bank and other agencies in one of the more revolutionary applications of television yet to be attempted.

An experimental project for the intensive use of television in education has been carried out for three years in Niger. French programme personnel and sociologists have been actively involved in the UNESCO-assisted television pilot project begun in 1963 in Senegal. One of the few television stations in the world to be closed down was also assisted in its establishment by French Aid. But Haute Volta Television in Oagadougou was soon seen to be unviable and little effort has been wasted on training men to run it.

French Government policy toward communication in Africa has been dramatically emphasized in recent announcements of plans for a communication satellite.

Government communication consulting agencies have drawn up the engineering and programming proposals for a scheme which would provide direct reception by augmented television receivers from Dakar in the West to Antananarivo in the East. The aim of this project would be to provide a high standard of in-school and adult educational television programming to all francophone countries in Africa.

While this enterprise is still in the project description stage, it does illustrate the advanced state of French communication capacity and the importance which successive governments have given to the educational-development role.

U.S.A.

As the world's largest broadcaster, outstripping by far any other country in transmitter power, number of stations, number of radio, television and colour television receivers, the United States has naturally had a profound influence on communication techniques, practice and policy throughout the world.

In defining the role of communication in development, in measuring the impact of communication, in providing a scientific structure for communication research, American scholars, social scientists and communication theorists have dominated the field to the exclusion of all but a handful outside the U.S.

American governments' policy and USAID involvement in the promotion of communication development has not, however, been as consistent as that of the other major aid-giving countries.

Commercial broadcasting, which has served American enterprise so well at home, has a very chequered reputation in developing countries. The intensity of commercial radio and television competition in Latin America, Thailand and the Philippines has at times reached near-chaotic proportions in emulating the American example. There is a growing consciousness, however, that a more ordered and constructive use of broadcasting was possible in these countries and America has not been reluctant to support and encourage these developments.

Previous USAID practice favoured contracting to non-government agencies - often universities but sometimes commercial organizations specifically designed to provide a technical assistance service - and sometimes sell equipment and programmes. RTV International, for example, has provided management services and training assistance to such countries as Ethiopia, Kenya and Jordan. RCA International provided a similar service to the beginnings of television in Nigeria.

As far back as 1964, President Johnson enunciated an American policy in supporting international communication development. The Ford Foundation in India, Kenya, Colombia - to name but three - has given action to the theories of Schramm, Lerner, etc. in communications assistance. In Colombia, the Peace Corps was used to provide a massive support-feedback system for a concentrated application of educational television.

The experience of American Samoa - the first place in the world where the majority of the education input was provided by television - has more recently been applied to El Salvador where USAID experts and equipment are helping to bring about far-reaching changes in the education system.

Major capital inputs, however, could not be said to be a characteristic of American communication aid. High level advisory services provided by the Ford Foundation, USAID or private concerns, and assisted university places for foreign students studying communication, are today the principal forms of grant aid in the field. It must be borne in mind, however, that the US is by far, the largest contributor to the international agencies of capital and technical assistance and communication is an increasingly important part of these agencies' activities in development.

Any consideration of America's likely future role in communication development must inevitably be dominated by the satellite. American pre-eminence in this field will not be diminished within the present decade but American policy on the use of satellites for national and regional purposes is bound to undergo profound changes.

On the international level, pressure by INTELSAT members has already reduced the dominant role of COMSAT and further reductions, including non-American management personnel, are intended. As ground stations increase in number and potential alternatives emerge through European space capacity, continued adjustment in the American position will no doubt follow. Meanwhile, a number of influential US figures have strongly advocated a more generous policy in respect to developing countries and less of a business-oriented posture than is presently adopted by COMSAT and its legislative backers.

The NASA/India agreement which would have made available the ATS-7 synchronous satellite scheduled for 1972 has now been delayed until 1974 to be used by India one year later. This news has been greeted with dismay in many quarters where it was hoped that the Indian satellite would dramatically demonstrate the advantages of this new technique. Those who have advocated a conventional terrestrial system in situations such as India's are strengthened in their argument that a satellite is too susceptible to political/economic vagaries to be the basis of a national communication system.

Feasibility studies expected to be undertaken by UNESCO/UNDP/ITU in the near future include a regional educational TV satellite proposal for Latin America, and multi-purpose satellites for Indonesia and for the Arab States. Such studies have in the past, used American design, construction and launch projections as the engineering parameters. These are freely available, of great reliability and the product of a few leading American engineering/manufacturing firms. In considering the future of America's role in communication development, the enterprise of such corporations should not be underestimated.

Federal Republic of Germany

Among the nations whose contribution to communication is unconnected with a former colonial obligation, the Federal Republic of Germany is by far the most significant. The two foundations which present the major political parties of West Germany, the Deutsche Stiftung fur Entwicklungslander (German Foundation for Developing Countries) and the Friedrich Ebert Stiftung have been the most active organizations in the world in the promotion of communication training.

Since 1960, the contribution of the Federal Republic of Germany to communication in Asia and Africa have included the following:

Sudan	-	radio transmitters, studio equipment and training
Ethiopia	-	radio transmitters, studio equipment and training
Togo	-	radio transmitters and training
Dahomey	-	radio transmitters and training
Ghana	-	television film production and training
Turkey	-	television equipment and training
Pakistan	-	television equipment and training
India	-	television equipment and training
Indonesia	-	television equipment and training
Singapore	-	television equipment, film production, training
Ceylon	-	radio network

As well as these substantial capital grants, West Germany has been an active collaborator with the Food and Agriculture Organization in sponsoring farm broadcasting courses and the Friedrich Ebert Stiftung has cooperated extensively with UNESCO in the planning of regional training establishments in Asia and Africa.

The growing West German experience in the communication-assistance field is, perhaps, best revealed in Singapore where FRG capital resources and technical assistance will underwrite an imaginative long-term programme. This will include the building of a second-channel television station,

an adult education film production and training project for the Asian region and the financing of an Asian regional communication research clearing house. The eminent Indian communication research specialist, Dr. Lakshman Rao has been appointed to head this centre.

At an early stage, West German communication aid was centred on the provision of broadcasting equipment - of which she produces a variety of high quality systems including: Siemen's Telefunken, Fernseh, etc. - and training of foreign students in Germany. The latter activity inevitably meant six months or more of concentrated German language courses. Today, however, the emphasis is much more on German experts working in the field.

German equipment is still supplied in abundance and sold in many cases to round out television systems, radio installations, etc. in which German equipment forms the basic installation. German engineering and engineering training is highly regarded and the reputation is maintained by these projects.

German engineering and programme trainers were responsible for the television station in Rawalpindi. The television installation in Ankara is principally German and most of the engineers are German trained. More recently, the FRG has undertaken to build India's second television station - in Bombay. The first Indian station, in New Delhi, has a majority of Indian equipment.

The regional approach, first attempted by FRG assistance in Africa is based upon the production of technical-training films in Ghana which are distributed to other English-speaking countries in the continent. The use of Ghanaian performers and a style of teaching determined from the Ghanaian use of the film makes these films more acceptable in Africa than any which are produced abroad.

The Singapore projects are modelled on the Ghanaian experience. Here the adult education films will be mainly produced in Singapore and student producers from other Asian countries will be brought to Singapore for training. Production may also be undertaken in Indonesia, however, where local situations are required and where the FRG is undertaking a major programme for the government television system.

Since the inception of the Colombo Plan, Australia has been an active contributor to the development of radio and television. The country's own development has been so profoundly influenced by communication, it would be surprising if this were not the case. Naturally, Australia's chief involvement has been in South-East Asia but many African broadcasters have also received training at the Australian Broadcasting Commission's radio and television training centres. Rural radio and educational radio broadcasting have been the principal areas of training contribution. Australian experts have been sent to Malaysia, Ceylon, Singapore, Indonesia and, of course, to New Guinea and other South Pacific Trust territories. Australia is an active member of the Asian Broadcasting Union and the ABU's Secretary-General is the former Director-General of the ABC.

Scandinavian Countries

Norway, Sweden and Denmark share similar, although by no means identical views, on what should be the structure and function of broadcasting. Sweden, as the largest is, however, particularly conscious of the part which communication has played in the country's social and industrial achievements. East Africa has been a special area of interest to these countries and Norway and Denmark have contributed capital, equipment, and technical assistance experts to communication development and training in Kenya and Tanzania. Sweden has also undertaken to assist educational television development in Cuba.

Canada

The telegraph together with the railway provided the first reality of Canadian confederation. Concern with strengthening these first tenuous bonds has been marked by uniquely Canadian responses to the advent of each new communication medium. The Canadian Broadcasting Corporation and National Film Board of Canada are object lessons in the use of communication for national purposes.

The lesson has not been lost on countries which benefit from Canada's various bilateral programmes; the CBC and NFB have been popular organizational models, as well as regular sources of technical assistance expertise.

The Ghana and Malaysia Television organizations were established with the help of CBC engineers and producers; the former case including more than 250 man/months of expert assistance and an equal amount of training to Ghanaians in Canada. Nigeria, Sierra Leone, and countries of the Caribbean have called upon Canadian communication assistance. Major capital inputs to communication (microwave) have been made in India and Turkey. More recently, a mixed communication team has gone to Tanzania.

Canada's recent decision to orbit the world's first domestic synchronous satellite is consistent with the country's record for communication enterprise; the desire to develop the Canadian north was a major factor in this decision. Developing countries will be keen observers of the satellite project as Canada's use of communication for development enters a new era.

Technologically advanced, wealthy and uncombered by an imperial past or rigid present, Canada is a welcome participant in a wide variety of francophone as well as English speaking bilateral programmes. But Canada also has strong links with international organizations and the interest and activities of these agencies in communication forms an increasing part of the development scene.

The International Organizations

Communication between nations has been recognized throughout history as a pre-condition of peace. The Achaen League of Greek city states was built on a regularized system of communication designed to obviate mutually-debilitating wars. Twenty-five years ago the United Nations Organization witnessed civilization's prodigal return from near-Armageddon to the reinstitutionalization of dialogue. It is not surprizing then, that the longest established international organizations are those concerned with communication - the International Telecommunications Union and the Universal Postal Union.

Today there are numerous international organizations working with large and small permanent secretariats - or none - each responding to a need among professional groups to share and enhance their common interests. Some of these organizations, the International Film and Television Council, for example, have broad objectives to facilitate collaboration among national and private film organizations. Others are more highly specialized, like the International Institute of Film on Art.

The last record on international associations in the mass media showed 31 primarily concerned with the press, 22 with film and 10 with radio and or television.

Each of the UN specialized agencies has a communication function, to encourage wide understanding of its goals as an organization or to use the media for specialized instruction within the agencies' field of competence.

The Food and Agriculture Organization has been an active organizer of rural broadcasting seminars and training courses in many parts of the world.

UNICEF has made large financial contributions to educational television aimed particularly at assisting teacher training and primary schools.

The United Nations Development Programme is the principal financing organ of UN technical assistance and it has over the years contributed heavily to communication development through the UN Agencies. Recently however, INDP has moved directly into the communication field by establishing the Development Support Communication Centre in Bangkok. This essentially film based operation is an Asian promotion centre for Project Support Communication, and Development Support Information. The objective of PSC is to encourage the integrated use of media in development programmes. DSI means to inform UNDP member countries of development in the world, its problems and achievements.

The ITU, as earlier noted, was established 80 years before the UN system came into being. Under the UN umbrella, the ITU has built up an enviable record of sound technical assistance. Its telecommunication training institutes, staffed by international teams of experts are models of multilateral co-operation. But outside of the ITU, which is concerned solely with the "hardware" aspects of the media, major international communication role falls to UNESCO.

UNESCO's activities in mass communication can be summarized as follows:

Research, Policies, Planning, Training, Applications and Publications.

The programme functions at the national, regional, and international level, assisting member states, promoting and assisting regional communication organizations and holding regional seminars, meetings, and training courses, and organizing international meetings on subjects of mutual concern to UNESCO's members.

Finally, the organization has a regular programme of publications including training manuals, country and regional reports, professional and statistical summaries, books on subjects of current interest like space communication.

A cross section of UNESCO's communication activities will illustrate the scope of the Organization's work. The following are among the current programmes.

<u>Level</u>	<u>Place</u>	<u>Project</u>
National	India	UNDP Special Fund 3-year project to assist establishment and operation of national TV training centre, Poona.
National	Turkey	Four-man, 3-month expert mission to prepare long-range plan for development of national television.
National	Malaysia	Four-man, two-year project to assist in establishment of national radio and television training centre.
National	Nigeria	Two-year project to organize and assist in African regional mass communication training.
Regional	Korea	Asian training course in the use of mass media in family planning.
International	Paris	Seminar on the mass media and violence.
International	Paris	Meeting to establish regional clearing houses for communication research.
Publication		Radio Production for Development (a manual for radio training in developing countries)

From its variety of experiences in every region of the world UNESCO has, over the last twenty years, accumulated a substantial knowledge of communication and development. From its own communication staff and from the expert ranks of its more than 120 member states, the Organization, together with ITU provides planning and advisory capacity which is unavailable from private or national organizations.

It is in this context that UNESCO has argued for a system's approach to national integrated communication planning: e.g., the continuous planning for the systematic development of the communication sector as a whole and for the design and application of all the communication sub-systems which are necessary to perform the variety of communication functions necessary to society.

It is a concept which has not yet reached the attention of many national economic planners. But the realization of communication's place in development is growing and UNESCO's long-term programme will emphasize communication policy and economic studies to meet anticipated planning requirements. Meanwhile, there are needs and priorities in communication development which must be met on demand. These are discussed in the section following.

NEEDS AND PRIORITIES

Previous sections of this paper have described some of the contexts in which broadcasting media can assist and are assisting in the development processes. The following pages will attempt to establish some scale of needs and priorities for each of the applications of broadcasting which have been isolated - general public programming, instructional and educational broadcasting and social development. Before doing this however, it may help to set broadcasting again within the broad context of development.

Development is, above all, the sustained improvement of productive capacity - whatever qualitative measure of social achievement is used. When a society can, or should, as Galbraith suggests, cease to use this standard then it can also be said to be "developed".

There are two current doctrines of development which attract the support of economic theorists. The "big push" theory contends that there must be an across-the-board effort in all sectors of the economy lest one neglected sector should undermine the successes of the others. The "selective growth" strategy states that spreading the minimal resources of a developing country too thinly, to cover all sectors, will prevent any one of them from achieving significant growth. Whatever doctrine is upheld by economists, it is generally agreed that the objective in sustained productive capacity is a minimum increase of 2 per cent, per year, per capita, without external subsidy.

The means of reaching this "take-off" point will obviously vary from country to country depending upon natural resources and the political and social circumstances. There is evidence that resources alone will not produce the desired result.

It is also generally acknowledged that such development cannot occur unless assisted by the developed countries, who, although they represent only a third of the world's population, nevertheless control five-sixths of its output.

Among the various forms of assistance which may be offered, aid in strengthening mass communications is a key sector - since communications are not only part of modernization itself, but are equally important in increasing information flow and in creating or reforming educational systems. The account of communication which appeared in Part 3 of this paper was concerned with three separate areas of interest: the efforts and problems of the developing countries themselves, the assistance rendered by the developed countries, and regional and international groupings and initiatives.

In the field of radio and television broadcasting, assistance in communication development has characteristically been offered in five main categories, i.e.:

- a) the provision of equipment, facilities and financial aid
- b) training
- c) the production, distribution and exchange of programme materials
- d) regional and international cooperative ventures
- e) research and research applications

a) The Provision of Equipment and Facilities

The provision of hardware - in the form of equipment, or indirectly through loans or other financial assistance - is the most common and longest-established form of support given to developing countries. Radio and especially television broadcasting are highly cost-effective when they are deployed to maximum capacity but they require a considerable level

of initial investment - a level frequently outside the resources of an emergent country. In Part 3, it was shown that a large number of broadcasting services have been developed only through practical assistance of this kind, mostly under bilateral arrangements.

There are obvious advantages to the donor country in this approach which may receive maximum acclaim for the minimum effort. If assistance is offered in the form of equipment, it will normally be confined items of the donor country's manufacture. There is therefore an incentive for the recipient, at some later time, to renew its equipment from the same source and to establish close links with the donor country's traders.

This is a perfectly valid position, and a useful function of aid. But there are some drawbacks to such an arrangement which should also be acknowledged. If assistance is to be viewed, not purely as a form of commercial investment, but also as a disinterested part of an aid programme, a donation of equipment will only be of value if it is handed over to trained technicians and producers; special training arrangements are therefore called for. It will be effective only when used as part of a coherent broadcasting policy; some consultation with the recipient government and careful monitoring of the development programme is also demanded. These points will be developed at greater length in Part 5 of this paper; for the moment however it should be enough to point out that the provision of equipment or finance, on its own, is unlikely to produce very convincing results. From a business point of view alone, some further involvement will pay dividends: poor workmen traditionally blame their tools.

b) Training

Throughout the broadcasting field, training is needed at all levels of experience, ranging from technical and engineering skills to management and analytical techniques. The UNESCO survey of training needs in Asia,

carried out in 1968 revealed, for example, that by 1972 an estimated 35,000 people would be engaged in television and radio, all of them requiring professional training.

It has already been shown that both national and international contributions in this area have been sporadic and largely uncoordinated. Experts have been sent from national or international agencies, to help develop organizations scattered throughout the world; many training courses have been devised, usually over short periods of time, to help train producers and technicians in specific skills. Scholarships and fellowships are regularly available for producers and others to attend courses in the West, or to be attached to Western broadcasting organizations.

There is no doubt that such initiatives have been helpful, but they suffer from several limitations. In the first place, students from different broadcasting organizations - and often students from the same organization - have been exposed to training programmes devised according to different philosophies and have learned many different broadcasting techniques. Most countries in the West have individual approaches to the techniques of radio and television; these arise quite naturally out of cultural variations. They are not likely to disturb the experienced practitioner in the field, who can read between the lines and see the underlying assumptions behind a particular practice. The novice, however, (especially the novice from a developing country who has no frame of reference from which to proceed) is less likely to make such fine judgements, and there can be genuine misunderstandings and confusions when he returns to his home environment.

It may be too that the student from a developing country who receives his training in a foreign environment will be unable to transfer what he had learned to his own situation without a good deal of difficulty.

He will have learned to work with equipment of a particular type, in a particular work situation; unconsciously he will have assimilated a variety of practices, from Trades Union operations down to production logistics, which will not necessarily match the requirements of his own country.

In recent years a new philosophy of training has emerged which runs generally as follows. Basic training is best given in the student's own country; he will then be learning in a real-life situation and problems of communication or transfer of learning will not be raised. More advanced training can be secured, later in his career, at a regional level, where economies of scale can be effected through regional cooperation and new techniques introduced but where the student is still generally in touch with the culture and traditions of his home. Foreign training and study tours are best reserved for the most advanced student, who has enough experience of broadcasting to relate what he sees to his home environment, filter out what is useful and reject what is irrelevant.

If this philosophy is accepted (and it is now becoming commonplace) it follows that cooperation between national, regional and international agencies is essential. If a number of countries are involved in training for professional skills, they have to be willing to adopt a common language and set of techniques - deriving from the situation in which they find themselves and not from accepted practice in the U.K. or Canada or Germany. Again this is a point which will be extended in Part 5 of this paper.

c) The Production, Distribution and Exchange of Programme Materials

In the past, one contribution which many Western countries have felt that they could make to national development has been in the provision of general-purpose programme and insert materials, distributed free or at minimum cost. In some cases this has amounted to little more

than a commercial enterprise; most broadcasting companies of any size maintain a sales department which markets (either through agents or through its own representatives) selected products on an international scale. Occasionally, special rates are offered for "pioneer" broadcasting organizations, in the hope that these will continue to buy a product once their finances are more secure. Governments, similarly, produce informational or propagandist films for distribution abroad, normally free of charge.

This idea has also been extended to cover the production of instructional materials (and general educational materials) by the developed countries for use in the emergent world. Often these are complete films, or series of films, dubbed into English or into local languages, for direct transmission on local screens. A different initiative was taken, in the U.K., by the Centre for Educational Television Overseas, when it produced 'kits' - basic components for television programmes, on a variety of subjects ranging from mathematics to English language instruction - which could be converted into programmes, at negligible cost, by local broadcasting organizations.

There is clearly a place for the production of centralized materials of this kind, but it has often been overstated. It is the experience of many broadcasting organizations that films completed in the West, even when they are produced in 'international' versions with a track left blank for a local commentary, are rarely created precisely enough to suit a local situation. The CETO 'kit' concept, while certainly more flexible, still left only a limited margin for local variations to be made. Probably the most useful assistance which can be given in this area is in the provision of a range of 'insert' materials for programmes, to be built up according to the demands of each specific country, but not structured in advance. At the moment, such materials are difficult and expensive to come by, because

of copyright limitations throughout the world and because of the absence of any centralized form of cataloging. This is an area where national and international agencies could profitably come together to create a reservoir of visual and aural illustrative materials, which could be drawn upon at will.

Some attempts have already been made to develop appropriate methods regionally. The South East Asian Ministers of Education Secretariat (SEAMES) has begun a centre for the development of educational methods and the Friedrich Ebert Stiftung is now setting up a base for preparation of adult educational methods in Singapore. But the field is still in its infancy.

d) Regional and International Cooperative Ventures

There has been, in recent years, a much greater emphasis on regional and international broadcasting schemes though it has not always provided very satisfactory results. Relatively few countries are so confident of their own national progress that they can easily subscribe to a regional programme, particularly if to do so involves some sacrifice of autonomy. Yet when such projects as satellite communication are mooted, the logistics are such that they become feasible only at a regional or international level.

The development of regional schemes is a prolonged affair. They are usually created through the particular initiation of an international organization (such as a UN agency) or of a regional organization (such as SEAMES or the ABU). The normal arrangement is for the host country to contribute land and buildings and to bear the domestic recurrent costs of heat, light, caretaking etc., with other support coming from user countries (after an initial period of financing which may stem from international agencies such as UNDP). It is not always easy to convince the host country that the advantages which it can expect to derive from a regional scheme are commensurate with what it is putting into the project; equally, it is not always easy to persuade

user countries to take full advantage of it when complete. Regional projects need careful nursing, both during and after their developmental periods. But they are bound to stabilize, if only because certain kinds of progress (e.g. satellite development, advanced production and technical training) can come only from regional cooperation.

The regional projects which are most likely to succeed are those which arise out of the region itself, created by its member countries and not imposed externally. The new regional project for broadcasting training in Asia, for example, is being constructed out of demands articulated by the Asian Broadcasting Union - an association of Asian broadcasters which is not dominated by any international or extra-territorial agency. The most likely fields for future regional projects are, in fact, those of broadcast training, the use of satellites, the creation of library networks for television and radio, and the development of national programmes and information services.

d) Research and Research Applications

In discussing communications development, it has been natural to concentrate first on the practical attempts which have been made to introduce, extend and re-inforce the mass media. But the influence of the media is bound to depend upon other factors outside their contents and the competence of those who work within them. Sociologists have made a number of studies of communication flow, and have stressed the importance of 'opinion leaders' in the community, in mediating the output of broadcasting and other media. A mass communication is part of a network - its transmission is followed by a series of inter-personal communications in which the original message is modified, glossed and frequently changed. For this reason, an understanding of the process of communication itself is vital. Indeed the effectiveness of mass communications in developing countries has been limited partly because of a lack of knowledge about such fundamental questions as the

level of penetration of the media, the pattern of traditional communications, and the implicit and explicit relationship between traditional and modern communication forms.

In the developed as well as in the developing world, research is a most difficult area to finance. For obvious reasons, donor governments are more willing to embark upon concrete aid programmes with immediately recognizable results than upon more abstract programmes of investigation and in consequence the formulators of communication policy are often groping in the dark, with little in the way of secure principles on which to build.

The priorities in research and its applications are, generally, the same in the developing world as elsewhere. There is, firstly, the need for more in the way of clearing houses (such as the recently created AMIC in Singapore); centres in which results of existing projects can be collected, tabulated and compared, so that their findings can be applied in practice. Second, there is a continuing need for new research projects, and field applications in pilot form - particularly those with a special relevance to development. More has to be known about the communication process and its application to social change - the mechanics which govern information transmission and the dynamics of the acceptance, or rejection, of innovation. In more defined areas, more has to be known about the use of mass media for instructional purposes - either independently, or as joint multi-media combinations. The problem of feedback, mentioned earlier in this paper, is especially important - what provisions can be made, within a mass instructional or educational system, for medium and audience, teacher and pupil, to respond to each other, and develop a process of empathy normally reserved for interpersonal communications? Many experiments have been designed to improve the sensitivity of the media to individual demands and capabilities - in providing talk-back facilities, linking students with computer configurations, multiplexing media channels so that simple forms of linear and branching teaching

programmes can be applied. There is no shortage of questions - but there is a shortage of institutions equipped and financed to carry out research programmes, and of competent field workers to administer them.

As mentioned earlier, Unesco has recognised this need for research oriented to the economic and cultural setting in which the results can be applied. As a first step, the Organization has nominated and subsidised an institution in each of the major geographical regions for the purpose of promoting sociological research in communication. But the "seeding" capabilities of Unesco are by no means enough to ensure that the value of research will be recognized by media practitioners.

From the foregoing, is it possible to develop some general policy formulations, to guide the apportionment and administration of aid for broadcasting development? The final section of this paper will attempt to do so; at the same time it will also pay particular attention to the difficulties which are characteristically faced by both donor and recipient. The relationship between these two is inevitably delicate. It is as well for any aid programme to be built upon realistic and pragmatic grounds.

5. POLICY FORMULATION

The problems associated with programmes of technical assistance can be characterized in two ways.

There is firstly the relationship between the country or agency involved in technical assistance and other agencies engaged on similar or related work. Secondly, there is the relationship between donor and recipient.

The major demand on the first count is for cooperation and coordination. It is unfortunately true that, in the past, some projects have been developed under bilateral agreements, which have been productive in themselves, but could have been far more durable had they been related to other national or regional schemes. There is, for example, no common set of production methods in the Asian region simply because each new broadcasting organization has been created by a separate training agency. This situation is already causing difficulties at the level of advanced regional training; trainers and trainees do not always speak a common language.

A national agency may well feel that the problems of coordination with a single government under a bilateral programme are sufficient in themselves, without undertaking to cooperate with regional or international agencies. The bureaucratic procedures of each agency involved are likely to differ, as are their management structures. This can impose delays and frustrations. Yet without such cohesion, however difficult it is to achieve, the potential of the broadcasting media is bound to be diminished. It is not possible to communicate, unless the communication codes are understood.

It has to be understood that there is no single model for communication development. There is a tendency, when broadcasting experts are sent

abroad to advise on development, for them to reproduce the same kind of environment to which they are accustomed at home. But the fact that, for example, the CBC's pattern of organization is successful in Canada does not mean that it can be satisfactorily transported to Africa or Asia. Every new communication model should arise out of a specific situation and not be imposed - in the context of management structure and policy formulation down to operating styles.

Coordination is an easy virtue to preach and much more difficult to legislate for. In the context of aid, as in other diplomatic spheres, areas of influence are often carefully guarded. While communication between aid-granting nations of similar political philosophy has grown in recent years, the objective and result has been to reduce competition and duplication; rarely is there a willingness to forego clearly-defined and recognizable areas of contribution.

The need for coordination is not confined to relationships between donor agencies; it is equally important to the dialogue between the agency providing technical assistance, and the recipient country.

The relationship between donor country and recipient is potentially fraught with difficulty - resentments are easily set up which are always latent in the relative positions of the two. The donor may set out with the best intentions but he is not necessarily in the best position to know what the form of his assistance should take. Conversely, the developing countries themselves will not always have a very clear notion of what is meant by modernity and they will often be particularly resistant to ideas and techniques devised originally by and for the West. There may be resistance to

importing Western personnel, or in justifying action programmes which seem to their originators, entirely logical. Often, the more complex and coherent the programme appears the more it can be resisted, and both tact and a facility for improvization are called for.

The details of an aid programme, in broadcasting as in other fields, can be consolidated only after a lengthy period of reflection, and repeated discussions with the country involved. It has to acknowledge that communications development is dependent upon a complex of factors - economic, technical, social and political - which may often be outside the control of the planners (both of the donor agency and of the recipient). If situations beyond broadcasting have to be changed, allowances must be made for the changes to take place, and adequate time allocated; if no change is possible, the final plan must be scaled down and properly phased, to match that reality. In many cases, sophisticated plans have been put forward for broadcasting development which are quite outside the range of the society conceived. Sometimes these plans have been accepted, by governments who are anxious at any cost and who do not wish to offend the donors. In the event, these have either failed, or have been re-drafted to suit a lesser perspective.

The pace of communications development is generally likely to be slower in an emergent country from that in the developed West. Mass media may be meaningful to the modernizing elite, but they will be must less so to the tradition-bound masses. A Western country which embarks upon broadcasting for the first time has a complete infrastructure - economic, political and technical - on which to build; in the emerging world this is rarely the case. There is a range of practical questions to be asked. Is there an adequate reserve of trained personnel available to maintain a broadcasting network? Will radio or television receivers be accessible for the bulk of a population, or can special precautions be taken to make them so (e.g. by a low-cost receiver production programme, or the provision of community reception centres)

A new communications framework in the developing world may be fighting traditional networks to which it is not properly adjusted; if this is the case the new media will stay, temporarily at least, out of the range of the general population.

The donor agency has, in fact, to maintain an extremely delicate balance. It has to review every situation in objective terms while at the same time resisting an inclination to impose solutions of its own devising. It will face pressures from a number of opposed sources ranging from the recipient country which is anxious for assistance and capital investment, to its own commercial lobbies, representing manufacturers who want to sell equipment as widely as possible. In many cases, it will find information hard to come by, in order to judge the merits of the case and it may also find it difficult to persuade a recipient to expend money and resources on collecting essential data, on carrying out research or mounting utilization programmes, because of the low priority which they put on such apparently non-productive services. It is unfortunate, for example, that in the majority of countries where instructional television has been introduced, little or none of the budget has been expended upon research programmes to check the validity of the material offered or upon training teachers in media use.

Some countries have, in the past, taken the easy way out; they have injected large sums of money, masses of equipment, and have then left the recipient country to sort out its programming and training requirements. At times, some lip service has been paid to the idea of training, by seconding a few experts for a period of months or weeks, to negotiate the difficulty of opening a service, but these have rarely been left in post for an adequate length of time (nor have they been encouraged to develop methods and management patterns which are appropriate to the society concerned). A good deal of broadcasting in the emergent world is sub-standard because no sustained programmes of training are offered for

local personnel and because it is not adequately recognized that the professional skills of broadcasters affect the quality and accuracy of the messages offered.

It is really of the greatest benefit to donor agencies to act as disinterestedly as they can. Experts seconded to a new service ought to be allowed a free hand, without too much involvement with embassies or high commissions; left to their own devices, they will develop allegiances to the country and organizations which they are assisting which cannot be misunderstood as a political manoeuvre. A government which is seen not to be exerting any form of pressure or exacting a quid pro quo for the assistance which it is providing is much more likely to be respected and encouraged. Similarly, equipment donated, if it is of any use will prove itself and will be bought again when replacements are in order. It is also as well to remember that developing countries, like donor agencies, have bureaucracies with idiosyncratic quirks. It is best to study procedures in any country to which assistance is being given, and to attempt to conform to their patterns as closely as is practicable.

Offset arrangements, "soft loans" on equipment and supply purchases and other policies toward the support of private enterprises fall outside the terms of reference of this paper. "Trade follows aid" is an honourable maxim however and no suggestion made here should be construed to be anti-commercial or lacking awareness of the realities of trade.

The most experienced aid-granting nations actively promote and assist the establishment of branch offices and plants of their national companies in developing countries. In the long run, the impact of this kind of enterprise may be more "developmental" than many disinterested aid projects where no-one involved has a personal, financial stake in the outcome.

The growing recognition of communication's rôle in development is bound to move radio and television out of the "social overhead" category where so many economic planners have traditionally placed it. This being the case there will be a new look at the importance of providing receivers as cheaply as possible, hence to manufacturing them locally where they are now only imported. The same applies, with less immediate significance to transmission equipment.

Licensing arrangements subsidized by aid are a possible answer. The building of plants, provision of training and management personnel for communication equipment manufacturing can be aid assisted. In some cases this may make the difference in a developing country expanding its communication or not or in choosing one manufacturing partner over another.

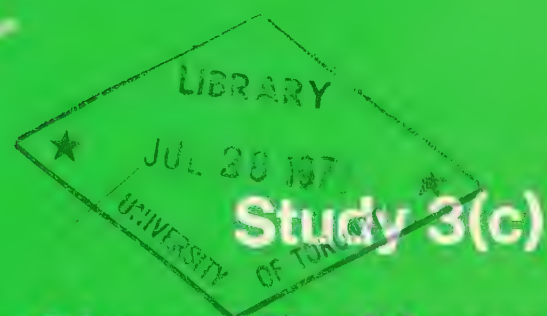
The following set of prescriptions are intended as rudimentary guidance in the classic government-to-government technical assistance situation. The underlying principles, drawn from long experience "in the field" are not altogether inappropriate for commercial projects.

1. Any request for assistance with communication needs to be examined, in the country of origin, by experts in the professional field as well as by diplomatic or aid agency representatives.
2. The request has to be reviewed in the light of the total situation within the country - taking into account whatever is known of its state of development generally in the technical, economic and political spheres.
3. The project proposed has to be an entirely realistic document, phased and structured, according to the pace of work known to prevail in the country concerned, and taking into account the reservoir of trained personnel likely to be available, both at the planning stage and in the future.

4. The proposal has to be prepared in the closest possible association with the authorities of the country itself.
5. While it is understandable that aid programmes will be linked with the commercial and political interests of the donor country, these cannot be paramount - and where they exist, they should be made explicit.
6. The agreement, implementation and execution of assistance programmes has to be kept as flexible as possible - with the bureaucratic procedures of the recipient country borne in mind, as well as those of the donor agency.
7. It is perfectly reasonable for a donor country to insist upon being provided with full information in order to judge the validity of a request - and also reasonable for it to argue strongly for research programmes, utilization exercises etc. wherever a project seems to depend for its success upon these being followed through.
8. Assistance cannot be confined to hardware. Expert advice and training are required, for sustained periods rather than for short crash courses.
9. The best experts available are needed for programmes of this kind; once appointed, they should be left as free and autonomous as possible.
10. A national project gains a good deal if it is related to comparable regional projects and to accepted philosophies of development as being practised in other spheres and by other agencies.

These ten points may seem to amount to a counsel of perfection; however, if they are followed through, as closely as is practicable, the results should not only justify the project in question but should guarantee it a viability well beyond the period of development.

TELECOMMISSION



Study 3(c)

**International Legal Problems
Concerning the Transfer and Storage
of Information**

The Department of Communications

STUDY OF TELECOMMISSION STUDY 3(C)

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AND STORAGE OF INFORMATION"

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Ottawa, 1971

This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

PREFACE

The report of study team 3(c) addresses itself to the possible legal problems that could emerge from the trans-border flow and the foreign storage of data. On the basis of the rather limited information available, it attempts first to depict the typical situation, a system whereby data is transferred to and from, and is stored in, a foreign data bank.

It then attempts to examine what the study team considered to be the main legal problems that could arise. These it divides into two main categories. The first consists of those problems which, while they can be considered essentially as political, require legal enactments - either domestic or international - for their solution. The main problem in this category is that of access to foreign-stored data.

The second includes questions and issues which are more classically legal, and which arise from existing laws - both domestic and foreign - and international conventions. Primary emphasis in this section is placed on the question of proprietary interests in data and computer programs. Conclusions, often by way of recommendation, are suggested at the various stages in the presentation.

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I. INTRODUCTION

The typical situation envisaged in this report is one of a computer in the U.S.A. with connecting terminals in Canada. Information, capable of being processed, transformed, transferred and stored, is sent from and recalled through the Canadian terminals. It is stored in the American computer on discs, tapes, punched paper tapes and similar modes. The information could be on such matters as police statistics, medical data, credit information, court cases, etc. There is not necessarily a one-way flow from Canada to the U.S., but there is no indication, from available evidence, of U.S. data being exclusively stored in Canadian data banks. Accordingly and notwithstanding the possible development of such Canadian banks, the Canada to U.S. flow is treated as typical and primary focus is placed on the questions to which it gives rise.

In addition to the consideration of these questions, the report also considers certain issues emerging from two other situations. One is where data stored in Canadian banks is sought by U.S. and other foreign entities. The second is where data is gathered about Canada and Canadians and placed in U.S. data banks.

The first gives rise to questions of the terms and conditions under which this data is and ought to be made available. Normally these are matters determined by contracts, wherein the terms, conditions, rights in the data, users and so forth are carefully set out. (In the case of confidential data, the regulation would be quite strict). What might be helpful here in addition, however, is for Canada and the U.S. (as well as other countries involved) to conclude an international agreement establishing principles governing (subject to particular contracts in different cases) the flow of this data, and an institutional mechanism for applying the principles in particular cases.

In respect of the other situation, the matter is less easily dealt with. Information has become increasingly "a-national". Non-confidential data gathered and stored about nationals or resources or facts of one country can not easily be regulated. Nor perhaps should they be.

In connection with facts about individuals, Canada could insist that Canadians who tap U.S. data banks for facts about Canadians (e.g. credit ratings) would be subject to the same laws that might be established domestically in respect of Canadian banks, to ensure privacy, a right to establish correctness and currency of record, and so forth. Internationally, Canada could propose an international agreement that would require the operators of data banks in each country (the U.S. for example) to respect the laws of the country about which data is stored (e.g. Canada) when making such data available to customers. Such a principle, affirming the rights of states in data gathered in and about them and

their nationals, might be helpful in other areas as well. In addition, an international agreement would prevent Canadians from attempting to circumvent Canadian laws by establishing banks in more laissez-faire jurisdictions. In general, and with respect to many of the particular problems outlined in this paper, the international nature of the topic merely adds a dimension to problems the substantive solutions to which have probably first to be reached within the Canadian context.

We turn specifically to the typical situation outlined at the outset. While exhaustive factual information about the numbers, types and owners of interconnections with foreign data banks is difficult to obtain, it is clear that these links are numerous and increasing.

One example is provided by the U.S. National Crime Information Centre in Washington. The RCMP has a terminal in Ottawa whereby information is fed into the Centre which has access to Canadian and U.S. information. At present, this is limited to data on stolen vehicles but future plans are to include other information such as data on offenders of the criminal code. By 1972 it is expected that the facility will be available to all Canadian police forces.

Another example is provided by the Metropolitan Life Insurance Co. which, while its main computer and data bank are located in Ottawa, does have a link between Ottawa and New York. Information pertaining to actuarial reserve values on policies is passed to New York and there is also an exchange of programme information to ensure system compatibility.

The National Bureau of Economic Research (NBER) in the United States has sponsored at least one conference with a view to creating a central information source by means of voluntary reporting about the existence of (economic research) data banks, in order that duplication may be avoided and exchange facilitated. Cooperation is envisaged on at least a North American scale. Additionally, some private surveys of data banks have taken place.

Any consideration of the legalities of international transfer of information should encompass the many relevant aspects of national and international library networks and the multiplicity of specialized information systems (whether library-based or not) with international ramifications.

The automation of library processes through the application of electronic data handling techniques to both international and external aspects of bibliographic operations represents, essentially, a mutation rather than something brand new. The data banks, in the form of card catalogues and similar devices, on which the library of today depends are changing, but the change is in most respects quantitative. Whereas the former information retrieval systems were limited to a search for data under broad subject headings without the capability of obtaining detailed information, the larger storage capacities of new data processing systems now allows for the wide scanning of large volumes of information coupled with the capability of extracting only the specific data required.

The implications in Canada of this change are best exemplified by changes within the federal government itself: by the broad powers, including responsibility for national and international library and information service operations, vested in the national librarian under the 1969 National Library Act, and by the Government's instruction that the National Science Library shall develop a national information network for science and technology under the general direction of the national librarian. These developments which will involve libraries at all levels of Government and throughout Canadian industry will involve even more active use of every device for information storage, retrieval and transfer over which questions of legality under present law can be raised.

It would seem desirable to have some procedure in Canada for obtaining a complete and up-to-date picture of the pattern and other details of Canadian data stored in U.S. or abroad.

The problems which the storage of data abroad can give rise to, may be divided into two broad categories - the "political" and the "legal". Any such attempt at compartmentalization inevitably runs both the risks of oversimplification and of arbitrary miscategorization. Thus, for example, the problem of a conflict between a U.S. law that permits data about individuals to be employed in a manner which Canadian law would deem an illegal invasion of privacy, or vice-versa, would be a legal problem, but one with important political dimensions. The line between the two is often blurred, and many issues can be validly interpreted as having both significant political and legal aspects.

Nevertheless it is of value to differentiate among those problems which affect the sovereignty, pride, and security of Canada and Canadians - labelling them "political", from those dealing with the applicability of existing laws - domestic and international - to certain issues traditionally considered to be matters for lawyers - classical legal questions such as copyright.

II. POLITICAL QUESTIONS

Turning to the political problems first, these comprise a grab bag of possible nightmares for Canadian self-esteem. For one thing, it could become extremely difficult to apply Canadian laws, in the area of privacy, and of the authorized use of data, to computers and data banks not physically in Canada. Orders of Canadian Courts, on searching Canadian businesses for instance, could become nullified simply because records were stored abroad beyond their reach. Another fear is that certain kinds of critical security, economic and resources information could fall into the hands of foreigners. A more fundamental problem could be created if Canadians were to continue their willingness to store data abroad and to concomitantly abdicate any role in developing their own capacity in the field. This could have the general impact of putting Canada even farther behind in computer and data bank skills and technology.

It would seem, however, that the most significant political problems tend to revolve mainly around the question of access: specifically, the question whether or not the Canadian sender can at all times and in all cases retrieve the data he has sent for storage into the computer, and to whether or not anyone else has access to or rights to examine or use it, either in the transmission (input or output) stages or in the storage ("stay-put") stage.

It is probably true that in nearly all cases, there is a contract between the Canadian sender and the American "storer", governing privacy, access and related questions. However, it is not entirely certain that the U.S. government will always refrain completely from requiring either that American computer companies reveal the nature or at least certain categories of the information they are storing - whether domestic or foreign - that access to certain information should be available to government authorities or other parties than merely the sender, or even that certain types of data may not be released for security or other reasons. This last would be more than possible where Canadians had access to data banks, in which their information and that of American sources were stored in one pool.

These various possibilities cannot be ruled out, especially in the face of current explorations by American authorities of a wide range of alternatives on how to cope nationally with questions of computers and access, privacy and so on.

The question of access, then, is a significant one. However, while it would of course be undesirable to have Canadian information inspected or otherwise interfered with in the U.S.A., and even to have to continually turn to U.S. computers for information on Canadian statutes, traffic statistics, etc, a policy of attempting to prohibit or of discouraging the foreign storage of Canadian data might be unduly negative and inhibiting. Instead, bilateral agreements with the U.S. should perhaps be sought on the free flow of transferrable and storable data. Being reciprocal, these agreements would also help to eliminate whatever misgivings U.S. users might have about employing Canadian computer utility services and about storing their data in Canada.

Domestically, Canada should provide intelligent support for the development of competitive hardware and software capacities in this country. This would not only help to assure that more vital Canadian data were stored in Canada, but could also attract a good deal of foreign business.

III. LEGAL QUESTIONS

A. PROPRIETARY INTERESTS

Turning to the legal questions, the first issue that arises is that of proprietary interests in data and computer programs. Based on the terms of reference of Study 3(c), it is assumed that "proprietary interests" refers only to private rights to exclude others, and that "data being communicated and stored" refers both to the storage of protected material and the protection of stored material. The comments below do not outline the nature of operation of any law except insofar as it may bear specially upon the subjects of Study 3(c). For example, if data banks enjoy copyright protection under the existing statute, they are subject to the general law about the precise nature of the rights, limitations upon them (doctrines of substantiality and fair dealing, compulsory and statutory licenses), term of protection, and enforcement provisions.

It should be borne in mind that in the development of copyright and related law in connection with the protection of intellectual property, domestic and international law tend to borrow heavily from each other.

With respect to computer data the legal questions relating to proprietary interests have not yet been adequately dealt with at either the international or the domestic level. Both the relevant statutes and common law principles in Canada (the Copyright Act dates from 1924, the Patent Act from 1935 and the operative Copyright Conventions from 1928 and 1952) antedate the technology of computer storage and retrieval of information, and none have been applied authoritatively in Canada to that technology. It is largely by analogy that opinions as to the existing law can be made. An inter-departmental sub-committee on copyright and related questions arising from both satellite and computer communications has now been established to carry out a full examination of the questions involved and to attempt to work out a Canadian position at both levels. In the international sphere, UNESCO, Bureaux Internationaux Réunis pour la Protection de la Propriété Intellectuelle (BIRPI) and the Intergovernmental Committee (IGC) have been holding meetings and study conferences on the subject. However, at this point, the state of the law is somewhat uncertain and the application (or non-application) of the laws to the technology is fortuitous.

The opinions expressed in this study should accordingly be read with the above in mind. Moreover, the international and the domestic flow of data will be treated as raising essentially similar questions in regard to proprietary interests.

Material in which copyright subsists probably cannot legally be stored in a computer in Canada without the owner's consent. Section 3(1) of the Copyright Act gives the owner the sole right to reproduce the work "in any material form whatsoever" and sub-section (d) specifies, as an example, the making of "any ... contrivance by means of which the work may be mechanically performed or delivered". This latter provision may have only a limited effect and may even depend on the types of peripheral output equipment attached to the computer, because "performance" and "delivery" are terms of art which do not envisage hard-copy reproduction, but the general prohibition probably covers storage in the machine itself. One American court even went so far as to classify an electromagnetic field as a material form for the purposes of copyright law. Such an interpretation would cover direct input by optical scanner.

Copyright protection goes only to the form of expression and even textual digital storage undoubtedly alters that form in a sense, but such alteration would unlikely save the storage activity from amounting to infringement. In any case, by Section 3(1)(a) the general right includes translation. A more difficult problem arises if only isolated aspects of a work, or a summary written for computer storage is stored. At what point does storage cross the line between "form of expression" of a work, which is protected, and informational or idea content which is not?

Even if input without consent does not constitute infringement, output of a protected work would. Manipulation or other use during the "stay-put" stage amounts to library use of a work but, in the absence of reproduction or performance would not infringe copyright.

Section 3(1)(f), which assures to a copyright owner the exclusive right to communicate his work by radio communication, would not affect transmission by wire.

It has been held that deposit of an unpublished manuscript in a library does not amount to "publication" within the meaning of the copyright law (see Copyright Act, s. 3(2)). It might follow that storage in a computer, even with multiple access facilities, would not constitute publication. This has implications for the term of protection under Section 6, for compulsory licences and possibly also for the public performance component of copyright.

With respect to material protected by laws of confidence, whether or not it also enjoys copyright, it is likely that machine storage subject to multiple or partly uncontrolled access would constitute publication and would thereby offend the common law requirement of secrecy. "Publication" does not have the same meaning in this context as it does in copyright law. On the other hand, such material is only protected so long as it is in some real sense confidential and its distribution strictly controlled.

With respect to the data bank as an asset in itself, independent of the legal status of individual items of data, protection may come either through copyright law, through the common law of confidence, or conceivably through the statutory law of unfair competition.

Apart from requirements of author nationality, Section 4(1) of the Copyright Act confers copyright on "every original literary ... work", and by Section 2(v), "whatever may be the mode or form of expression". Section 2(n) defines "literary work" to include tables and compilations, and the courts have found it to include catalogues of numbers, indexes, directories and other data. "Originality" has a precise meaning in copyright law to the effect that the work proceeded from the author's own mind or effort and was not copied from a similar work. The notion of "work" has been held by the courts only to refer to a certain indefinable minimum of expense, labour, skill, judgement or imagination expressed in a material form which is more or less permanent and capable of identification. Thus it would seem that a data bank would attract copyright although, depending on the character of the data, the doctrines of substantiality and fair dealing would reduce the effectiveness of protection. Also, of course, persons who invest in the assembly of marketable data may not find adequate protection in rights of reproduction and public performance.

Any copyright in a data bank would normally be owned by the major investor, perhaps even on a joint authorship basis, although some doubt could arise in the case of research grants or other support to, say, university personnel for the creation of data banks. Preferably, these doubts would be resolved in advance by contract.

Audio output facilities could have the effect of making a data system a "contrivance by means of which sounds may be mechanically produced" within the Copyright Act, although Parliament probably envisaged something more akin to a phonograph record. Special provisions applying to such "contrivances" concern the existence of copyright (Section 4(3)), the term of protection (Section 10) and statutory licence (Section 19).

The common law of confidence could give more extensive protection than copyright in that it comprehends access to, and any use of, the contents of a bank. Its limitations are (1) the asset must have a carefully limited distribution, and accordingly, the numbers and types of peripheral hardware items, and the restrictions on their use, could be critical, and (2) protection is limited to breaches of confidence or acts of bad faith. In this latter respect, a simple notice can be effective.

Section 7 of the Trade Marks Act may well go beyond the common law in this respect. By subsection (e), "No person shall do any ... act or adopt any ... business practice contrary to honest industrial or commercial usage in Canada". Uncommonly sweeping for Canadian legislation, it implements our obligation under Article 10 bis of the Paris Convention on industrial property. Its full scope has not yet been established by Canadian courts, but they have recently begun using it expansively.

Contracts, of course, are also very effective in the use of data banks and the sale of data, whether by electronic or other means of transfer. For example, the standard DBS contract for the sale of data under its CANSIM System provides:

"4. The Purchaser will not reproduce, duplicate, or copy any data tape or data card for further distribution or authorize, or permit any person to do so except with the written permission of the Bureau".

"5. The Purchaser will not transfer, sell, lend, lease, license, or otherwise dispose of any data tape or data card provided pursuant to this Agreement except with the written permission of the Bureau."

A contract, of course, binds only the parties to it.

As for Canada's international obligations respecting data storage and transfer, it is clear again that existing treaties were not negotiated to deal with the subject. The only intellectual property conference recent enough to have considered the issue, namely, the Stockholm Conference to revise the Berne Convention (1967), did not consider it at length. Nor was the issue raised in the working papers of that conference. The Text negotiated at Stockholm did include a new general right of reproduction "in any manner or form", but, while the better informed persons at the conference held the view privately that computer input was thereby covered, there was and is no official indication to that effect. This, despite the anxiety of book publishers at the conference that computer input be specified in the treaty.

Whether or not the Stockholm Text covers computer input of protected works, Canada has neither signed nor ratified its substantive provisions and the Act is not yet in force. At the same time it should be borne in mind that most countries regarded the new provision respecting reproduction to be largely declaratory.

In other respects the broad language of the Copyright Act mirrors the language of the applicable copyright treaties.

Canada is a party to both the Berne Convention and the Universal Copyright Convention; however, the U.S. is party only to the U.C.C. Under both, nationals of non-member countries become eligible for the Convention guarantees in member countries by publishing first in a member country. For most purposes this also includes "simultaneous" publication which by the Copyright Act, means within a period of fourteen days from the date of the first publication. American nationals have long enjoyed this "back-door" to the Berne Union. Even on the basis of the Canadian definition of publication "issue of copies of the work of the public") data storage could create problems where the nature of the data and the peripheral equipment turns publishing into a private demand operation. Additionally, the tendency of recent revisions of the Berne Convention is to redefine "publication" in functional terms of availability to the public. International communications networks and information systems could lend quite an impact to such a redefinition, since the place of publication would be technologically determined.

BIRPI and the IGC have almost completed a joint study of the copyright and related implications of computer data banks. The study will probably be released in 1971 and will form the basis for discussions and decisions over the next three years.

So far as the law relating to computer programmes is concerned, there is a high measure of interest and a low measure of agreement. There is no specific Canadian law on the subject and laws in other jurisdictions are in an uncertain state. From established legal concepts, the leading candidates to provide protection are copyright, confidence, contract and perhaps, patents.

When programmes were wired into the hardware as part of the circuitry there was little doubt that they were patentable as part of a useful machine. Only very recently, however, (in a few court cases and an announcement of the U.S. Patent Office in 1969), has the United States indicated willingness to grant patent protection embracing programmes in more adaptable forms. Invention and novelty are presumably seen to lie in the algorithm, and utility in the object programme as part of a functioning machine. In the United Kingdom patent protection is granted to programmes on a similar basis, although the Banks Committee, reporting on the British Patent System, July 1970, recommended that no patent protection should be granted to such programmes.

In the United States, the U.S. Patent Office had published guidelines on the patentability of computer programmes to the effect in general, that they were unpatentable. However, following the decisions of the American Courts in the case of Prater & Wei, and in the case of Bernhart, those guidelines were withdrawn and each application is now considered individually on its own merits, bearing in mind the effect of those two court decisions. The Bernhart decision held, in effect, that a computer

programmed in a new way was patentable, being considered as a new machine. The other decision held that an automated process may be patentable. Consequently, these two types of subject matter are now being allowed. The U.S. Office, however, is still refusing protection on programmes per se, and algorithms.

The Canadian Patent Office recently established a tentative policy against patent protection of computer programmes pending a binding judicial decision or the imminent revision of Canadian intellectual property laws. It is expected that the Economic Council of Canada will report on the protection of computer programmes and their impact on the Canadian economy in March, 1971.

Currently, in Canada, programmes probably attract copyright protection. Beginning with the algorithmic diagram, each stage through the flow chart, the source programme, assembly and object programme constitutes a literary work whether expressed on paper, punched cards, magnetic tape or disk, and whether it is a systems programme, a general purpose or a special purpose programme.

In fact, programmes are currently distributed on the basis of copyright and the law of confidence. To reproduce terms from a standard IBM licence agreement:

" No right to print or copy, in whole or in part, the licensed programs or optional materials is granted hereby except as hereinafter expressly provided".

" The Customer shall not copy, in whole or in part, any licensed programs or optional materials which are provided by IBM in printed form under this Agreement".

" The Customer agrees to reproduce and include IBM's copyright notice on any copies, in whole or in part, in any form, including partial copies in modifications, of licensed programs or optional materials made hereunder in accord with the copyright instructions to be provided by IBM".

" The Customer agrees not to provide or otherwise make available any licensed program or optional material, including but not limited to flow charts, logic diagrams, and source code, in any form, to any other person without prior written consent from IBM".

" The Customer agrees that he will take appropriate action with his employees, by agreement or otherwise, to satisfy his obligations under this Agreement with respect to use, copying, modification, and protection and security of licensed programs and optional materials".

" Within one week after the date of discontinuance of any licence under this Agreement, the Customer will certify to IBM in writing that the original and all copies, in whole or in part, in any form, including partial copies in modifications, of the licensed program and any optional material received from IBM or made in connection with such license have been destroyed".

In the United States, trade secret law (i.e. the law of confidence) is subject to state jurisdiction while statutory intellectual property law falls within federal jurisdiction. The courts have recently been attempting to sort out the implications of this division of power and the reach of the doctrine of federal pre-emption. The most recent decision, that of Lear Inc. v. Adkins (U.S. Supreme Court, 1969) indicates the possibility that if something is eligible for copyright or patent protection (federal, statutory) it may be deprived of essentially conflicting protection under state law. Alternatively, American courts might reach the position that trade secret law is pre-empted by federal decisions concerning the appropriate limitations upon the general right to copy. In other words, it is possible that computer programmes in the U.S.A. will rely more and more upon statutory protection. Effects of such a development would be felt in Canada because of the nature of the industry.

For better or worse, most of the debate over programme protection has centered on patent and copyright law. In general terms patent law would not cover all programmes and its terms of protection is shorter than that of copyright law, but it would provide very extensive coverage where it did apply. Copyright law would protect more programmes and for a longer period, and would be easier to obtain, but would be less effective from the owner's point of view. Also in general terms, the programmers, service bureaus and software houses want higher protection than do the hardware manufacturers.

IBM, for example, has proposed a new system for the protection of programmes which mixes elements of patent law, copyright law, trade secret law and unfair competition law. Essentially, it is a registration system providing ten years protection against copying, providing that a "description of the concepts" underlying the programme is made public at the time of registration. The programme itself would remain secret for the ten year period.

Thorough revisions of both copyright and patent law are well advanced in the U.S. Congress, and their decisions will probably have to be considered in the drafting of future Canadian legislation.

International obligations bearing on programme protection are characterized by the same vagueness as was outlined above with respect to data banks. There is no special law on the point, although presumably programmes come within the copyright conventions.

B. COMPETITION: COMBINES AND ANTITRUST

Beyond proprietary interests, the next legal questions arise from competition policy.

Revisions to the combines legislation are being drafted and will be introduced in Parliament, so there is little point in analyzing the existing Combines Investigation Act. Briefly, the existing Act extends beyond "articles of commerce" (data?) to very few services, and there is little doubt but that the new statute will cover services more comprehensively.

Domestically, in both Canada and the United States, the relationship between the general antitrust laws and the standards or powers of regulatory boards has been unsettled. The need for improved coordination and established priorities continues. An example of an area in the communications industry where problems may well arise is the need to encourage standardization and technical compatibility without discouraging entry or innovation.

The Sherman Act has been notorious for its foreign reach. It prohibits activities "in restraint of trade or commerce among the several states or with foreign nations...." and is applied to activity which has an undesirable economic impact in the United States. By applying to American companies it has a worldwide impact. However, any country would presumably do most things within its power to achieve its domestic economic goals. Insofar as communications is concerned, and given the continental character of telecommunications systems, American policy on the relationship between carriers and data processing, for example, may well affect Canadian policy. Data banks can be located anywhere, and U.S. authorities are unlikely to permit Canadian decisions about the structure of the teleprocessing service industry to frustrate their own antitrust and related policies.

Antitrust problems which seem particularly relevant to the communications industry are mergers, exclusionary or other

restrictive monopolistic practices (e.g. Carterfone¹), vertical integration, price discrimination, exclusive dealing, long-term requirements contracts and tying (e.g. the "unbundling" issue).

The imminent structure of international information systems demonstrates most acutely the need for international agreement on the above issues.

The Kennedy Round of GATT negotiations has had the effect of expanding many economic markets beyond political boundaries, thereby increasing the general interest in a multilateral antitrust treaty. In the specific case of the communications and information industry, the technology dictates that the relevant geographical market for most regulation will be either continental, regional, hemispheric or global. There is no general antitrust treaty, although the OECD has considered the possibilities. Limited regional cooperation has, however, been achieved in the European Coal and Steel Community and the European Common Market.

For Canada's immediate purposes, bilateral agreement with the United States might be adequate. From the time of the Fulton-Rogers understanding of 1959 Canadian and American Departments of Justice have followed a policy of mutual notification and consultation respecting such antitrust enforcement as might have effects in the other's jurisdiction. The 1959 arrangement was continued in 1969 by a Basford-Mitchell understanding (Hansard, November 5, 1969, pp. 574-75) but, while it is a useful institution for cooperation in the control of multi-national economic activity, the agreement does not attempt to negotiate binding standards or formulate common goals. It remains a voluntary framework to deal with problems as and when they arise.

C. IMPORT AND EXPORT CONTROLS

On the matter of export and import controls with regard to computer data, lawmakers - both at home and abroad - do not appear to have given this much attention.

Inasmuch as copyright and patent protection involve exclusive national rights they imply certain impediments to importation by persons other than the owners, which would apply equally to data and programmes so far as they may be covered by those laws. Sections 27 and 28 of the Copyright Act, enacted within the Berne Convention, deal specifically with limitations on import and provide a procedure for utilizing Schedule C of the Customs Tariff.

¹ In 1957, the U.S. AT&T System had filed a tariff forbidding the attachment or connection of equipment into facilities furnished by the telephone company. On June 26, 1968, the F.C.C. found that the tariffs in question were "unreasonably unlawful and unreasonably discriminating" under the Communications Act. (Reference: Carter and Carter Electronics Corp. v. American Telephone and Telegraph Company et al. FCC 68-661. Decision of June 26, 1968)

D. THE TAXABILITY OF DATA

The next issue pertains to the taxability of data crossing the border. Despite the technical feasibility of transferring large amounts of data by telecommunications means, it appears at present that in most cases, it remains more convenient and economical to transfer data by physical transfer of its container.

However, when data is carried across the border, practice apparently varies. In one case it was the value of the physical tapes that was used to establish the rate of customs duty, whereas in another, it was the value of the programme. Yet when the programme is sent by telecommunications means, (which is what the individual in the latter case, faced with a high duty, simply did) no such provisions are enforced. It should be noted that the I.T.U. Plenipotentiary Conference at Montreux, 1965, adopted a formal opinion expressing "the desirability of avoiding the imposition of fiscal taxes on any international telecommunications".

With regard to sales tax, the federal government has applied a sales tax under the Excise Tax Act to computer programmes, holding that the recording of transmitted impulses on tapes and discs is the manufacturing of goods, and that they are liable to tax whether they are sold or manufactured for the manufacturer's own use. The Ontario Government has also expressed an interest in applying a sales tax in this area.

Canada, along with 24 other countries, is a party to the Beirut Agreement (UNESCO) of 1948 under which parties agree to exempt visual and auditory materials of an Educational, Scientific and Cultural character from customs duties, currency controls and any necessity for an import licence. It was noted at a meeting of governmental experts convoked in 1967 to review the agreement that technological progress had dated it somewhat in that new audio-visual products such as videotape, microfilm and computer tape may not be covered. It was also noted, however, that a wide interpretation is in practice being placed on the agreement's provisions. Canada is not a party to the related Florence Agreement of 1950, which is more extensive in the materials exempted, but which only exempts them specifically from only customs duties.

E. OTHER LEGAL QUESTIONS

Beyond these, Canada is bound by Article 35 of the I.T.U. Convention relating to the secrecy of international telecommunications. Moreover, it is obliged under Article 17 of the Radio Regulations of the I.T.U. to prohibit and prevent both the unauthorized interception of radiocommunications not intended for the general use of the public and the unauthorized disclosure of intercepted "information of any nature whatever". This principle should perhaps be generalized to cover both wire and wireless communication.

On the subjects of liability and individual privacy, Canada will probably want to extend internationally the effect of decisions she may reach domestically. Indeed, international co-operation may well be necessary to make domestic decisions and laws fully effective.

Again, as with respect to the more classifcally political questions, agreement with the U.S.A. is Canada's first priority, for geographical and technological, as well as economic and political reasons.

* * * * *

TELECOMMISSION



Study 3(d)

The International Role of Canadian Telecommunications Companies

The Department of Communications

Study 3(d)

The International Role
of
Canadian Telecommunications Companies



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Ottawa, 1971

This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

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TERMS OF REFERENCE

TO:

1. Describe the categories of Canadian operating, scientific/technical and manufacturing telecommunications companies which are active in respect of foreign countries.
2. Identify their interests and interactions with foreign entities, together with the general effect of different standards and practices.
3. Consider whether any changes, such as in national or international co-ordination, are desired.
4. Generally state in broad outline any other considerations affecting this role of the companies.
5. Indicate trends if significant changes are foreseen.

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ANALYSIS OF THE INTERNATIONAL ROLE OF CANADIAN
TELECOMMUNICATIONS COMPANIES

SECTION I Canadian Telecommunication Enterprise Involved
 in a Direct International Role

Introduction

The conclusions and recommendations in this report are presented as prepared by the company representatives who were for the most part senior executive engineers. As well, representatives of the Department of Industry Trade and Commerce (IT&C) and the Canadian International Development Agency (CIDA) played an important part in discussions where their international work was involved.

Contributions together with papers prepared at the request of other groups are listed in Appendix I. The material received from the Canadian Broadcasting Corporation is gratefully acknowledged, but at the request of the CBC representative, is not reflected in the text of the report. This is because the Telecommission deals mainly with public telecommunications services other than broadcasting and because there was difficulty in assimilating some of the more general aspects of electronics and radio, particularly with regard to consultation abroad. In the same way, telecommunications for air traffic control and hydro-electric power projects are not generally considered here.

Perhaps one of the important factors of this study is that it presents the views of the companies concerned, with little attempt made to reach a consensus. When all of the International reports of the Telecommission Study Groups are seen together, the conclusions given here can therefore be taken as those industry wished brought forward on its international role. This in turn will, it is hoped, contribute to the general conclusions.

1.1 Operating Companies

It is generally accepted that the Canadian public finds that telecommunications services to other countries are adequately met by the operating companies but there does not at present appear to be very much public interest in the roles which they play.

This may not always be the case though. There may be strains in the present operations which could develop into cracks. Do the operating companies find the International regulatory picture simpler than our domestic situation with its Federal, provincial and municipal boards and commissions with legal powers? What role does the operating industry play in the drafting, promulgation and enforcement of international regulations and standards? Are the monopolies of operation which feature domestic telecommunications as clearly established in the International section of the business? How do private companies deal with foreign government Post and Telegraph and Telephone departments? If a foreign government advises the Canadian government that an immigrant to Canada owes a telephone bill, does the Canadian telephone company have a role to play? These are a few questions which might be asked concerning the role of Canadian companies operating international telecommunications services.

Like the developing nations and natural resource-oriented middle powers, Canada may be said to have an international telecommunications service compatible with its stature as a nation, but it is still reliant on other countries for the design and production of much of the special equipment used, e.g. submarine cable and repeaters, telex equipment, and more recently the message switching computers.

Probably because of the special commercial arrangements, operating techniques, equipment design and financing conditions which are characteristic of most international enterprise, details of the business arrangements, corporate responsibilities and planning which support our international telecommunications are not as widely understood as they might be. The experts are comparatively few in number, and like the old-time telegraphers have tended to keep their art somewhat to themselves.

International Telecommunications are however increasing in economic and social importance even more quickly than domestic telecommunications. To the sociologist this may seem a simple extension of the brotherhood of man from the tribe to the super-tribe. To the economist, it is a most interesting study in the allocation of resources. International Telecommunications-Testing a Forecasting Model of Demand by W. Naleszkiewicz, Professor of Economics, Cleveland State University, and Evaluation of Forecasting Techniques for U.S. International Telecommunications Traffic by Norman Learner, Ph.D. thesis, American University, 1968, are examples of recent interest in this subject.

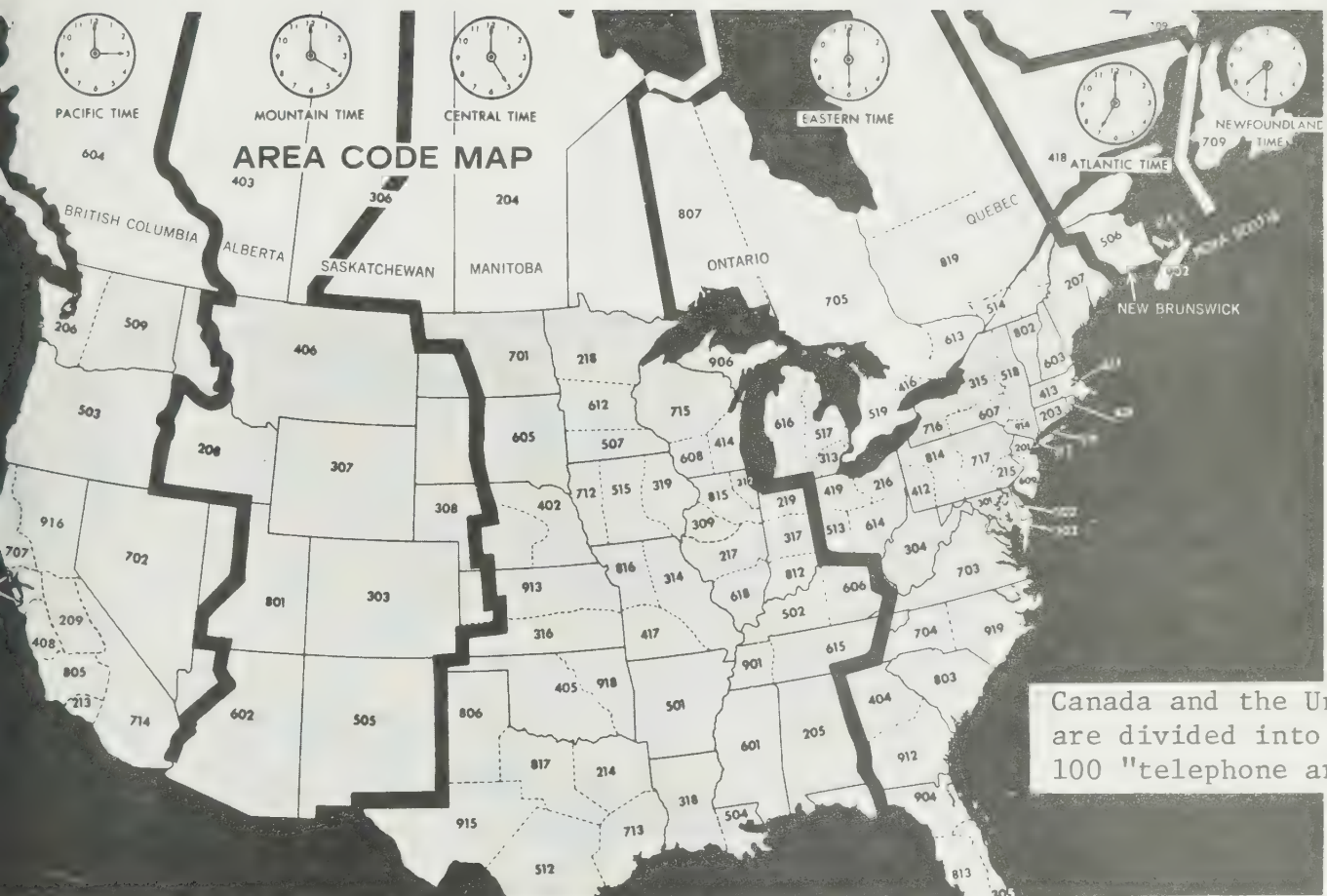
Like the earlier work of A. Jipp, published in German in the late fifties, all the results tend to indicate a close association between the level of demand for international telecommunications services and major economic variables such as GNP, national income, the level of foreign liabilities, and demand deposits. They also tend to indicate that the relative importance of political, social, and other non-economic variables is inversely related to the degree of a country's economic development. Other factors requiring further research include the influence of the number of telephone instruments per capita, the quality and cost of international circuits, and the impact of government policies and international regulations.

When forecasting the demand for international circuits, the rate of increase of telephone traffic is extremely important. The influence of human factors such as language and time zone separation is obvious, but difficult to quantify. For the computer communications of the future machine factors as well as human factors will determine traffic patterns. A Canadian subsidiary of an European firm could do data processing on the Headquarters machine after office hours in Europe. Japanese computer time could become very attractive on the West Coast of North America, and Canada could sell computer time to Australia if high quality, high speed circuit economics develop favourably. This situation will be sensitive to data transmission costs but different from the way in which overseas telephone rates affect telephoning patterns, since computers can operate 24 hours a day at a profit.

Human factors have a significance in Telex as well, since printed material in a foreign language presents less barrier to comprehension than the spoken word, and a telex message received after office hours simply remains on the machine until it can be handled. For example, a question sent from Montreal to Zurich at 5 p.m. can be examined as soon as European offices open and replied to in time for the opening of business in Canada.

The geographical, historical and economic ties of Canada have led to an International service which like many other aspects of Canadian telecommunications is unique. Our International services may be classified in several different ways. For example, Canadian owned or foreign owned; companies with public shareholder financing and Crown Corporations set up with Government financing. A third classification is by principal income, i.e. the role in which they appear to their customers - public telegraph, public telephone, or leasing of circuits. A fourth classification is whether or not they play a role in the special inter-governmental arrangements which have always existed between Commonwealth Countries.

CHART 1A



RECT DISTANCE DIALING enables you to dial your
n Station to Station long distance calls to millions
telephones in Canada and the United States.

TELECOMMISSION 3d Figure (1 a).

CHART 1B



CABLE ROUTES = —————
 SATELLITE = - - - - -

CANADIAN OVERSEAS TELECOMMUNICATION

Comprising a total of 495 circuits for telephone, telex
 and telegraph services between Canada and 33 countries.

TELECOMMISSION 3d Figure (1 b).

A fifth classification would be to separate "overseas service" from "continental service". This has a basis in history, since our overseas facilities are successors to the trans-Atlantic telegraph cables of 100 years ago.

The apparent simplicity of this division may be seen by comparing the long distance telephone call areas in Canada and the USA in Chart 1A with the overseas routes of the Canadian Overseas Telecommunications Corporation in Chart 1B. Company roles are however more complex, as summarized* below:

INTERNATIONAL (Overseas)

Telecommunications services between Canada and all other countries except continental U.S. and Mexico.

Carriers: Canadian Overseas Telecommunications Corporation (COTC)
Western Union International Inc. (WUI)
Commercial Cable Co. (CCC)

Operators: The COTC provides operators for overseas telegraph and telex services but not for overseas telephone service, WUI provides Montreal operators for its overseas telegrams. CN and CP operators accept all telegrams.

All overseas telephone calls are handled by Bell Canada and the British Columbia Telephone Company at Montreal or Vancouver, respectively, through TCTS.**

Billing: Follows the operator patterns, but the telephone bill is presented by the local company.

INTERNATIONAL (Continental)

All services between Canada and continental U.S.* and Mexico. St. Pierre et Miquelon Telegraph Service.

Carriers: Telephone Association of Canada members
COTC in case of St. Pierre et Miquelon
Canadian National Telecommunications
Canadian Pacific Telecommunications

Dial: Direct dial telephone service is generally available to US points the same as it is to Canadian points. Telex is a direct dial service through Western Union to Mexico as well as USA.

*This summary is intended to indicate Company roles. For details of connection on any particular route, refer to Telecommission Study 3(e).

**Trans Canada Telephone System (TCTS) is described later in this Report.

Operators: Such calls from Canada to the USA involve only the originating long distance telephone operators.

This also applies to operator handled calls to Mexico, Hawaii and a number of points in the Caribbean. CP and CN telegraph operators accept telegrams for "continental" and "overseas".

Billing: Follows the operator pattern.

The present organization of the Canadian International Communications industry is the product of long technological evolution and numerous corporate and government decisions largely governed by type of traffic and mode of transmission.

The total international revenue is estimated to be nearly one hundred and fifty million dollars for the year 1970. The overseas sector was about 26 per cent of the total in 1968. It is estimated as 30 per cent for 1971. Table 1 gives some revenue estimates for 1968 and 1969.

TABLE 1	CANADIAN INTERNATIONAL REVENUE BY ROLE					
	"OVERSEAS"			"CONTINENTAL"		
	Annual Revenue \$1 Millions		Rate of Increase	Annual Revenue \$1 Millions		Rate of Increase
	1968	1969 (est)		1968	1969 (est)	
Telephone	9.20	11.50	25%	61.70	67.25	9%
Telegrams	6.30	6.60	5%	2.60	2.42	-7%
Telex/twx	5.10	6.90	35%	2.90	3.50	20%
Data	.02	.03	30%	.02	.03	30%
TV & Radio	.14	.15	5%	.16	.17	5%
Leased Circuits	9.20	10.10	10%	20.00	4.40	7%
TOTALS	29.96	35.28	17%	86.38	94.77	9½%

The most rapid growth rate shown is for Overseas Telex which is still an operator service. The introduction of direct dialling to Europe might mean an even higher growth rate. The decrease in telegrams to USA reflects the decline of domestic telegrams observed in most countries where long distance telephone and Telex is readily available.

In looking at telephone statistics it is interesting to note that calls to the USA are almost twice those placed from one province to another in Canada. Overseas calls run about one tenth of the USA calls. The telephone revenue figures do not of course indicate the proportion of calls, since the average overseas call costs more than the average call to the USA. The number of International calls total less than eight per cent of Canadian long distance traffic.

The corporate pattern and international contacts of the companies are described in the following:

Canadian Overseas Telecommunications Corporation (COTC)

A Crown Corporation established by Act of Parliament in 1949, "to carry on the business of public communications by cable, radiotelegraph, radiotelephone, or any other means of telecommunication between Canada and any other place".

COTC was formed at the time the international telecommunications of the United Kingdom were being nationalized by the post-war Labor government. It was necessary to create a successor to the service historically provided by Marconi and Cable and Wireless to the British Empire in earlier days. By intergovernmental agreement, a chain of Crown corporations was formed to modernize Commonwealth cable and radio facilities and to operate the Commonwealth Telecommunications System. The first notable change was in 1956 when telephone circuits to Europe began. Satellites brought the next big change, ten years later.

Prior to 1963 the COTC participated in the Consultative committees CCITT and CCIR of the International Telecommunications Union (ITU) (see Appendix II) as part of the Government of Canada. Since then COTC membership in the CCITT and the CCIR has been as a Recognized Operating Agency. COTC has not participated in ISO or IEC. Although it holds Associate Membership in the Trans Canada Telephone System, concerned with the sharing of revenue on overseas calls, COTC is not a member of the Telephone Association of Canada, and consequently does not participate in the TAC technical committees.

Canadian membership in Intelsat is held through COTC as the operating agency. In the recent re-organization of Commonwealth Telecommunications, the President and General Manager of COTC became the Canadian member of the Commonwealth Telecommunications Council. The COTC Vice-President, Engineering and Operations, represents Canada on the Commonwealth Cable Management Committee which maintains operations and engineering management of the whole Commonwealth system, now including many communication satellite circuits. On occasions COTC has been an invited observer at the Committee of European Posts and Telegraphs (CEPT) for particular items of trans-Atlantic operations.

COTC contacts with international telecommunications organizations are a continuation and expansion of those established by the predecessor companies, Pacific Cable Board and Canadian Marconi Company and include, in addition to those countries with whom COTC has direct circuits, the following, in which there is active participation:

- The Commonwealth Telecommunications Council and its various bodies.
- INTELSAT and its Committees.
- CCITT Plenary, Study Groups and Working Parties.
- CCIR
- Some of the Sub-Committees of the CEPT (Conference of European Post and Telecommunications Administrations), when dealing with North Atlantic matters.

The issues discussed and pursued by COTC in these forums are:

- a) The provision of efficient and economic international telecommunication service for Canada;
- b) The standardization of services, facilities offered, and transmission parameters;
- c) The compatibility of equipment and functions;
- d) The day-to-day and long term administration and operation of international services.

Participation is at all Administration and most operating levels.

The Western Union International Inc. (WUI) is a public corporation split off from Western Union as a result of a US government decree of the late 1950's which called upon WU to sell off its external communications. No satisfactory buyer being found, WUI was finally announced in 1963, as an independent company. Its origin can be traced to Samuel B. Morse and the first transatlantic telegraph cable, as well as to the San Francisco to Moscow overland telegraph route which gave the Telegraph Creek ~~to~~ B.C., its name. WUI maintains an office in the UK. Its headquarters are in New York. A small operating staff at Montreal accepts cablegrams, and CN/CP operations at any Canadian point can accept WUI business.

The Commercial Cable Company (CCC) is a public corporation with headquarters in New York, which leases lines to its Montreal terminal. It is a subsidiary of International Telegraph and Telephone through ITT World Communications Inc. New York. It has no operating staff in Canada: CN/CP performs this function. Its origin goes back to transatlantic telegraph cable including the reorganization of the pre World War 1 German cable assets in New York. The introduction of submarine telephone circuits to Europe took place in 1956, and since then WUI and CCC telegraph circuits have been established on these because of the lower cost and higher speed operation than was possible on the old telegraph cables. By an FCC decision of 1964, the US international telegraph companies became entitled to a share of the ownership of the fourth (TAT-4) and later US sponsored cables.

The Canadian Pacific Telecommunications (CPT) is a department within the operating structure of the Canadian Pacific Railway, which is a public corporation with Canadian stockholders in the majority. One hundred years ago as one of the inducements to complete the first trans-Canada railway line it was given a monopoly of the telegraph services along its route. As there were not many trains and few settlers it was economical to use the same telegraph lines for both. These rights were successfully defended by CPR in 1919 when Marconi sought to provide trans-Canada Radio Telegraph Service to Vancouver, and again in the early 1930's when the Teletypewriter Exchange System (TWX) was being established in the United States.

In 1956 when Telex (dial teleprinter services) Europe to Canada became possible on introduction of submarine telephone cable, CPT together with CNT formed a consortium to construct a Telex network in Canada. Overseas connections were available through COTC. Western Union did not introduce Telex until the following year, but provided Canadian connections as soon as a Telex exchange was constructed in the USA.

CN/CP now have over 16,000 telex subscribers who generate seven million dollars worth of business to Europe and four million dollars worth to USA annually. There are 102 Telex exchanges in Canada. All the subscribers can dial USA and Mexico directly. Overseas Telex is still reached through a COTC operator, but direct overseas dialling is planned.

CPT has never offered telephone service although its corporate charter would permit it to do so. CPT experts participate in CCITT and CCIR through the Railway Association of Canada, (RAC) which holds Recognized Operating Agency membership status in these two ITU consultative committees. RAC is the only railway organization with ITU committee membership. The microwave and space radio groups in CCIR and the telegraph and data groups in CCITT are their chief interest.

The Canadian National Telecommunications (CNT) is a department within the operating structure of the Canadian National Railways, which is a Crown Corporation reporting to Parliament through the Minister of Transport. CNR was formed 50 years ago when the financial difficulties of private railway companies would have left Canada with only one trans-continental line. Like CPR these private companies had telegraph concessions. Both the old Dominion Telegraph Company (a private company on whose lines Alexander Graham Bell held the historic field trial of his telephone) and the Government Telegraph Service can be traced to CNT. In the 1870's the federal Government set up the GTS line to the north of the Winnipeg-Regina-Calgary CPR line in support of the North West Mounted Police and settlement on the prairies.

Unlike CPT, CNT provides some public telephones now serving 22,400 subscribers, in Newfoundland and north-west Canada. These telephones have access to the rest of Canada through the TCTS and to overseas through COTC.

The CN/CP microwave network and participation in Telesat lead to interest in CCIR study groups. Concentration in CCITT has been on telegraph and data matters. Participation is through the Railway Association of Canada.

CN/CP telegraph service, where overseas telegrams are concerned, is compatible with the ITU Telegraph Regulations, to which Canada is a signatory. When these regulations are under revision, CN/CP consult directly with Government. They attend administrative Telegraph and Telephone Conferences (a regulations body of the ITU) as expert advisers and part of the government delegations.

The Trans-Canada Telephone System (TCTS): Member companies of TCTS interconnect directly and provide long distance dialling with companies in the USA. As indicated on Table 1 on page 8, the annual value of our continental telephone traffic is now about \$70 million with an annual rate growth of nearly 10 per cent. In this continental service the TCTS plays a vital role.

Another vital international role of TCTS is to provide operator service on overseas calls where dial service is not yet available. There are two national "operator gateway" offices at Vancouver and Montreal respectively. Through facilities of the Canadian Overseas Telecommunications Corporation (COTC), BCTel Vancouver is interconnected with New Zealand, Australia, Japan and most Pacific countries. Through facilities in the United States it interconnects with a few countries as shown in Chart 1(b). Similarly, Bell Canada Montreal interconnects with Europe and countries beyond through COTC. It also interconnects with a few others through ATT New York. The annual value of Overseas telephone calls is now about \$10 million with a growth rate of 25 per cent.

Canadian public access to International telephone service has been expanded and modernized constantly through the co-operative efforts of those telephone companies which are the largest in each province respectively. There are eight full members of the Trans Canada Telephone System:

The Avalon Telephone Company Limited
 Maritime Telegraph and Telephone Co. Ltd.
 The New Brunswick Telephone Company Limited
 The Bell Telephone Company of Canada
 Manitoba Telephone System
 Saskatchewan Government Telephones
 Alberta Government Telephones
 British Columbia Telephone Company
 (The Canadian Overseas Telecommunication Corporation
 is an associate member.)

The member companies provide, own, and maintain the necessary plant in their respective territories, working to common plans, with uniform standards of engineering and operation, and with long distance revenues shared. The inter-company service information agreements hereafter indicated, and inter-company planning and operating committees, play major roles in ensuring compatibility and efficiency throughout the network in Canada and in connections to the USA.

All-Canadian coast-to-coast long distance telephone service has been provided to all Canadian telephone companies since 1931. The TCTS is not an incorporated body, and does not own any plant. The services in the system include Telephone T.W.X. and other data communications as well as leased circuits for telegraph, facsimile, radio and television programme transmission. All of these are involved in the international exchange of telecommunications.

The largest member company, Bell Canada, plays a special role in international aspects of the Canadian telephone industry. Bell Canada obtains from the American Telegraph and Telephone Company a flow of general operating information for an annual fee. It also has access to discoveries made by the Research and Development Laboratories of the Northern Electric Co. Ltd., a Bell Canada subsidiary. In turn, Bell Canada provides information services to a dozen other companies in Canada.

Although some of the TCTS members are provincial companies, Bell Canada has a federal charter. It operates in Ontario and Quebec, the Northwest Territories and Labrador. It serves six million of Canada's eight and a half-million telephones. Subsidiaries operating in the four Atlantic provinces, Quebec and Ontario serve an additional six hundred thousand telephones. Only 2 per cent of its stock is held by the American Telephone & Telegraph System. Bell Canada shares are on the market; 98 per cent of the shareholders are Canadian and they own 95 per cent of the common stock. It took a high degree of cooperation to create a coast-to-coast telephone network in Canada. The problems involved in linking this network with the United States were surmounted by cooperative planning. Now that overseas telephone service is growing so rapidly, experience gained in continental network development is being exercised in the provision of global network service to Canadian subscribers through international cable and satellite facilities such as those operated by COTC and Intelsat.

The Telephone Association of Canada (TAC): Through arrangements made with the Department of Communications, which represents Canada in the International Telecommunications Union (ITU), and under the conditions of participation of the ITU Convention, Chapter II, TAC holds membership as a Recognized Private Operating Agency, in the two consultative committees of the ITU. These, the *Comité Consultatif International de Télégraphie et Téléphonie* (CCITT) and *Comité Consultatif International de Radio* (CCIR) are described in Appendix II.

TAC was formed in 1921 to promote the interchange of technical and operating information between a somewhat wider range of Canadian telephone operating companies than those forming the TCTS. TAC's activities centre around multi-lateral committees; the Association is not directly engaged with operating enterprise.

Within the TAC-TCTS environment, technical operating and accounting studies on overseas telecommunications are conducted by a small group within Bell Canada, serving as a committee focus and working centre. This group co-ordinates the related work of the member companies, who help support it financially, and augment it with manpower from time to time. The work of these international committees requires continuity of specialized expertise from the national representatives. Co-ordination at the national level, as with COTC on Canadian interface matters, also requires continuity. The TAC, with COTC and the other Canadian membership of the CCITT, were hosts for world study meetings at Montreal in 1963 and 1970.

Manufacturing Companies Exporting Telecommunications Equipment:

In 1969 the value of telecommunications equipment exported from Canada was \$92 million, compared with \$72 million in 1967. Over half the product is sold in the USA.

Since 1961, the Export Development Corporation has financed \$91.7 million for telecommunications. This sum has been exceeded only by loans for Nuclear Power and Railways. The loans were for Dominican Republic, Greece, Israel, Jamaica, Philippines, and Turkey. For microwave equipments there were loans totalling \$10.8 million for Columbia, Liberia, Mexico and the United Arab Republic. Forty-eight million was loaned to Brazil for satellite earth station equipment. The total was \$103 million to 31 May, 1970. Other financing has been arranged through the Canadian Industrial Development Agency.

The categories of equipment considered here are:

Telephone equipment (\$20 millions, 1967; \$53 millions, 1969)

(As well as telephone sets and switching this includes carrier and multiplex for telephony and telegraphy.)

Some of the projects are:

Turkey

CIDA is contributing \$4,000,000 in grant aid to a \$25,000,000 telecommunications project in Turkey won under international competition by the Northern Electric Company of Canada. The project consists of supplying telephone equipment to the Turkish Posts Telegraphs and Telephone Administration.

Nigeria

In 1967, a \$1,600,000 loan was allocated to Nigeria's telecommunications programme to provide, through the Northern Electric Company of Canada, a 7,000 line telephone exchange in Lagos. In 1968, the project was increased by \$8,000,000 to provide telephone exchanges in eight additional locations and extend the Lagos exchange. A third phase is under study.

Asia

At the present time the major Canadian telecommunications project in Asia consists of a development loan for \$40,000,000 in support of a \$600,000,000 telecommunications development programme in India. Under this programme, major Indian cities are to be joined by high capacity coaxial cable and microwave systems increasing the capacity of existing urban and rural telephone networks, and generally improving efficiency and service. Canada will supply approximately \$23,000,000 worth of cable and

\$15,000,000 worth of microwave equipment, as well as some technical assistance support.

Radio Equipment (\$13 millions, 1967; \$10 millions, 1969)

(This includes microwave links, space borne and ground station satellite communications equipment and other radio communications, but excluding broadcast apparatus.)

Asia

Canada is undertaking three earth satellite stations, two in Pakistan and one in India, (RCA Company Montreal). The Pakistan stations will be used to transmit television, radio and telephone between the eastern and western parts of the country, through INTELSAT. The Pakistan loan is \$10,500,000 and includes, in addition, to the satellite stations, major improvements to other communication facilities, and training. A similar project in India at \$4,000,000 will help provide an earth satellite station at Poona, east of Bombay. The station will cost \$7,000,000 and will tie India to Europe by satellite. In India in 1963, Canada supplied and installed four dual diversity receivers and four transmitters in a \$250,000 project for the Indian Meteorological Service. This project was necessary to fill an Indian commitment to maintain the Moscow-Delhi-Tokyo link in the Northern Hemisphere Meteorological Communication System. Canada has just recently finished \$56,000 worth of test equipment for the Training Department. Malaysia has also been given fifty two-way semi-portable radio sets for \$150,000 to be used for the Aborigine Medical Service.

Commonwealth Africa

Other telecommunications projects are underway in Commonwealth Africa. Technical Materiel Corporation is supplying electronic equipment for five communications stations for the Kenyan national police force under a grant aid project of \$200,000.

In 1966, Canada agreed to a project to provide approximately \$115,000 worth of equipment and engineering services necessary for ground-to-air communications facilities for the Blantyre Flight Information Centre in Malawi. Two projects were done for the former East African Common Services Organization. In 1965, a \$38,000 radio transmitter was given to the East African Meteorological Department in Nairobi. Ninety-two thousand dollars worth of aviation electronics equipment, consisting mainly of 9 T.M.C. transmitters for the use of the Civil Aviation Authorities, have also been given to East Africa.

Francophone Africa

There have been no telecommunications projects undertaken by CIDA in Francophone Africa, although possibilities are being pursued for satellite communication earth stations.

Commonwealth Caribbean

There are no large telecommunications projects in the Commonwealth Caribbean comparable to the projects in India and Nigeria. At the 1966 Commonwealth Caribbean-Canada Conference, Canada suggested a regional broadcasting system. A feasibility study was prepared by the CBC and forwarded in February 1968. Reaction to the study has not yet been received but indications are that the smaller islands find the estimated operating cost to be high.

Two smaller projects have consisted of providing aviation electronics equipment. In 1963, Canada supplied an instrument landing system at Piarco Airfield, Trinidad. The total cost was about \$134,000. Canada has recently allotted \$165,000 to Guyana for the Guyana Airways Corporation.

The largest Caribbean telecommunications project in this area provided a radio telephone system for Jamaica. The \$770,000 loan purchased VHF and HF equipment for 65 fixed base and 66 mobile receiving and transmitting stations to link government departments. A 1968 extension brought in the Jamaican Railway.

Latin America

Through the Inter-American Development Bank, CIDA is now participating in a north-south backbone route in Chile. The loan of \$4,230,000 will extend the microwave system and provide radio telephone networks for access from isolated areas. Chile first prepared a National Telecommunications plan, using ITU technical assistance. The planning dates from the Latin American Regional Plan Meeting of the ITU at Santiago de Chile in 1965. Previous to this the Chile Telephone Company (ITT) had provided all the services.

There have been quite a number of changes in South America but the nationalization of communications services in Argentina in early September of 1970 came as a surprise to many. The holdings of a number of foreign companies, including American Cable and Radio Corporation, RCA Global Communications, The Western Telegraph Co. of Great Britain, which runs an open wire line over the Andes de Chile, and Italy's Italcable, were affected by this action. At the same time, the Argentine government announced a 15 per cent increase in rates for telephone, teleprinter and telegraph services.

The Argentine government stated that the termination of the concessions to the foreign companies was necessary to maximize its own revenues from Argentina's earth station, which went into operation in September 1969. Prior to this, Canadian calls to Argentina went by way of A.T.T. Among the companies involved, ITT Communications Mundiales, S.A., a subsidiary of AC&R, has been providing international services in Argentina under a concession granted in 1928. Since 1963, this International Telephone & Telegraph Corporation affiliate has invested \$6,000,000 in new and improved facilities.

As a result of the termination of the private carriers' concession, ITT has said that its Argentine subsidiary will suffer damages of \$3,800,000, in undepreciated equipment. ITT noted that its long service in the country, combined with the obligation under the concession to invest large sums in new equipment, "created a reasonable expectation" that it would not be put out of business "precipitously" before depreciating its new investment. RCA Globcom's interest in Argentina involved a 25 per cent ownership of Trans Radio Argentina, another company which is being nationalized.

There will be little difference in the international operations which have existed since the advent of satellite communications services. The correspondent for all carriers for telegraph traffic will be *Correos y Telecomunicaciones*, while for all other traffic the correspondent will be *Empresa Nacional de Telecomunicaciones* (ENTEL).

Wire and Cable (\$9 million 1967; \$10 million 1969)

(This includes all the varieties used in telephone service, from the home telephone to the exchange, within and between switching centres. Between cities, coaxial cable is used in competition with microwave relay according to the technical and economic circumstances. Although the great distances in Canada have tipped the balance in favor of microwave and domestic satellite, some coaxial cable is produced.)

Asia

Canada is now supplying telephone cable to both India and Pakistan. The National Standard Company of Guelph is manufacturing \$900,000 worth of cable over a three year period for Pakistan. The General Electric Company of Canada is completing \$353,000 worth of telephone cable of various sizes for India.

Commonwealth Africa

The major CIDA involvement in telecommunications in Commonwealth Africa has been Nigeria. In 1965 an initial development loan for \$3,500,000 was made to purchase telephone cable from Phillips Cable Limited of Brockville. This was done in co-operation with two British firms which supplied \$10,500,000 worth of telephone equipment. In Lesotho, \$33,000 worth of Canadian telephone cable is to be installed and a PABX system for 200 telephone lines is to be added by Canada.

Continental versus Overseas Marketing

But in spite of Canada's effort to sell equipment overseas, the USA is still the best customer, buying more than all the rest of the countries put together. The structure of manufacturing plant ownership in Canada facilitates some of this. The largest single exporter to the USA is the Canadian owned Northern Electric Company, which has a close understanding of the requirements of the US telephone market. Design, sales promotion, and sales financing to US customers are, of course, very close to Canadian market practices.

Summary

The composition, structure, and product lines of the telecommunications manufacturing industry are described in Telecommission Study 2(g). More than half of the industry's total output of manufactured products is supplied by Northern Electric, a subsidiary of Bell Canada. Recently a new company, Microsystems International, has been formed by this group.

Other major companies manufacturing in Canada described in Study 2(g) include Lenkurt and Automatic Electric as subsidiaries of General Telephone and Electronics of the United States and The B.C. Telephone and Quebec Telephone are also part of this group. The important subsidiaries of United States companies include RCA Ltd., Montreal, (Radio Corporation of America), Collins Radio, Raytheon, Canadian General Electric, Canadian Westinghouse, Canadian Admiral, TMC (Canada) Ltd. Radio Engineering Products began as a Canadian company and is now US controlled. Canadian controlled manufacturing companies include Canadian Aviation Electronics, Electrohome, Clairtone, Leigh Instruments, and Hermes Electronics.

Both the Canadian controlled companies and the subsidiaries have contributed substantially to our economy. Initially most companies, whether Canadian or foreign controlled are set up to service the domestic market. Due to the relative smallness of the Canadian market, and the comparatively high cost of innovation, most companies are forced to export a high proportion of their total output - often as much as 80 per cent. Even companies able to obtain licensed designs, either from parent companies or elsewhere, find that the limited size of the Canadian market makes it very difficult to manufacture competitively with foreign producers commanding larger (3-10 times larger) domestic markets.

To solve these problems the Canadian Government has been encouraging companies to be outward, rather than inward looking, and in the case of subsidiaries, to rationalize their production activities with their parent company. This philosophy has been accepted generally by most Canadian electronics companies, and many now make product lines, from a Canadian base, for the world market. This method of operation is not without its peculiar difficulties, however, even though there are attendant benefits.

The Northern Electric Company participates in CCITT as a member. A great many companies participate in the CCIR through the Electronic Industries Association of Canada. Through the Canadian Standards Association, several participate in ISO and IEC (Appendix II).

1.3 International Consultants (Active in Respect of Foreign Countries)

The annual export value of all consulting engineering services exported during 1969 is estimated at some \$40 million, a marked increase over the \$10 million average from 1964 to 1967. No break-out of the telecommunications sector is available. Considering the relative importance of civil engineering power, communications, airports, forestry, transport, gas and oil, it is not likely that communications consulting, however defined in detail, could be much more than ten per cent. That could make \$5 million an upper estimating figure. This is a little less than five per cent of the value of the international operating revenue per year, and a little more than five per cent of the value of the exported telecommunications products.

Export credits insurance is available for both short and medium term transactions, from the Exports Credits Insurance Corporation. Without this the problem of financing overseas consulting jobs would present serious difficulties particularly to the smaller consultive firms founded under the ownership limitations, allowed by professional engineering practice. Consulting engineers have no supplier affiliations or manufacturing interests.

The interest and support of the Canadian External Aid program stems in part from the value of disinterested professional advice when aid countries are selecting route and equipment alternatives. The largest project, in which no equipment was supplied, of \$490,000 was for consultation on architecture and engineering of television facilities at Kuala Lumpur for the Government of Malaysia.

Some Canadian consulting firms seek foreign work through the United Nations Development Program. The UNDP as well as other UN agencies at New York maintain lists of interested firms. The custom is that a short list of five or six firms is sent to the government involved when a project is being planned. The Canadian Mission to the UN at New York and at the UNESCO in Paris will assist. Successful consultants have been those who are highly competent in a particular field and selective in their approach to the UN agencies concerned. They get to know something of the Agency role and its procedures and even their changing mood pattern as international needs and funding change. Market analysis for international services and products, is another consulting service. This has been found useful by both government and manufacturers.

A variety of overseas engineering consultations have been performed. A typical listing published by one firm includes:

Empresa de Radio Telegrafos Y Telefonos del Ecuador
(now Empresa Nacional de Telecomunicaciones)

Route and propagation survey system design and specifications for main national microwave system.

Government of Malawi

Upgrading Flight Information Centre facilities,
Chileka International Airport (a Canadian
External Aid project).

Abu Dhabi International Airport

Planning, system design and specifications of
telecommunications and radio aids to navigation
(with CANSULT Limited, principal consultant).

Western Nigerian Government Broadcasting
Corporation, Nigeria

Study and system design for extension of tele-
vision coverage over Western Nigeria Region
(a Canadian External Aid project).

Government of Ecuador

Two microwave route designs - One of 250 miles in the
one coastal area and one of 200 miles crossing
a volcanic range of the Andes mountains with 960
channels for government use.

Supreme Headquarters Allied Powers Europe

(SHAPE Technical Centre)

Study and design of internal message movement
system in new SHAPE Headquarters, Casteau, Belgium.

Siemens and Halske, West Germany

Consultation on proposed provision of an Earth
Satellite Station in Canada.

An attempt to list the Canadian international consultants providing services abroad could only be made on the basis of an agreed definition. The description chosen was: "Canadian international telecommunications consultants identified in this listing are engaged for remuneration and from a Canadian base, in international consulting relating specifically to telecommunications".

Although the list given here is not necessarily complete, it was prepared by the consultant members of the study group with some particular restrictions which tended to limit the number included. They decided to omit any names where:

- (i) Practice was primarily related to non-telecommunications projects such as civil engineering, or electrical power.
- (ii) Consulting services by manufacturers, distributors, or promoters in conjunction with equipment sales were involved.
- (iii) Consulting services by government and benevolent organizations were performed free or at cost.
- (iv) Consulting services were "farmed out" to non-Canadian foreign controlled associates.

It was necessary then to take into account the consulting services of the Bell Telephone Company, now being sought by various smaller countries seeking to place their telephone service on a more efficient basis. The reputation of the company is well-known abroad, partly through technical presentations at ITU seminars and study sessions. There are many such demands, and Bell Canada, has established a small consulting group to deal with them.

Finally, the study group decided to list consultants who could not qualify for membership in the Association of Consulting Engineers of Canada, provided that the services were at the level of professional engineering or organizational consulting in telecommunications abroad, but to differentiate between the two categories. The list is:

- *Acres Intertel Ltd., Ottawa
- Bell Canada Consulting Services, Montreal
- Cancom Corporation Ltd., Montreal
- *Demers, Gordon, Baby Limited, Montreal
- *Gamma Engineering Ltd., Edmonton
- *Hoyles, Niblock International Ltd., Vancouver
- Pappas, N.J. & Associates, Montreal
- Pan-Com Canada Ltd., Montreal
- *Surveyer, Nenniger & Chênevert Inc., Montreal

Because of solicitation of work from UN agencies, and because they do not consider it professional to advertise their services, Consulting Engineers have to be very much aware of the importance of listings. The above list may be qualified by stating that firms that have been omitted may be added by application to the study group which prepared the list.

SECTION 2 Vital Issues Affecting their Interests and Interactions with Foreign Entities.

2.1 International Operating Services

Seen from the point of view of operating company executives, the following major roles could be discussed:

- (a) Corporate Management
 - planning, organizing, staffing, controlling corporate operations
- (b) Establishing and Equipping Routes
 - technical, economic and politically feasible alternatives, negotiating with other operating companies both foreign and domestic
- (c) Operations Including Engineering and Maintenance Standards
 - plant, automatic traffic and manual operations
- (d) Billing Customers and Settling Accounts
 - rates, procedures, credits and accounts, by-lateral and international agreements
- (e) Regulatory Matters
 - domestic, continental and international
- (f) Planning for Route Expansion
 - re-equipment and new services
- (g) Acquisition of Capital for Business Expansion

For short-term planning five years projection of current trends may be sufficient. This is the period chosen by the CCITT/CCIR World Plan, which last met at Mexico City in 1967. Telegraph and Telephone circuit routes are re-drawn for the next 5 years, routing and numbering plans are reviewed on the basis of Regional Plans. The emphasis now is on a greater accuracy of forecast. There is a suggestion that the data might be refined and the World Circuit Plan put into the ITU Computer for better calculation procedures. At present Intelsat makes its own predictions, and each operating company has to decide on its own specific route and circuit plans.

Taking the planning function by itself five activities could be noted as follows:

- (1) System Planning encompasses formulation of the broad policies and service goals on which all other planning is predicated;
- (2) Marketing Development Planning includes market analysis of present and future consumer service needs;
- (3) Technological Planning applies to all aspects of the network;
- (4) Financial Planning ensures availability of adequate financial resources to meet construction program requirements;
- (5) Manpower Planning is essential, of course, to ensure the availability of personnel skilled in communication technology.

The Telephone Association of Canada and the Canadian Overseas Telecommunications Corporation are vitally interested in the creation of a fully automatic world-wide telecommunications network. In the rising curve of overseas telephone and telex calls, in the emergence of new nations, in the growth of world trade and travel, and in the important technological developments of the past few years, they see a greatly increased demand for world-wide communications. They also see, in the International Telecommunications Union, a means of ensuring that the world's telephone systems are indeed organized to serve when the demand comes.

The different countries have varying standards of local service depending on national policy, economics and efficiency of telecommunications service organizations. There are about 998 telephones for every 1,000 families in Ontario and Quebec. (Coverage exceeds 100 per cent of families in Southern Ontario, where many families have telephone-equipped summer cottages.) Canada's rates, relative to the general wage level, are the lowest in the world. The cost of a month's residential service is equivalent to two hours' pay for the average manufacturing worker in Canada, two and one-quarter hours in the United States, more than four hours in the United Kingdom, and 16 hours in France.

The improvement of telecommunications services in overseas countries adds to the satisfaction which Canadian companies can give to their customers. Unproductive waiting time on international circuits and on operator assistance can reduce operating profit, hence improvement of service in other countries is among the vital issues recognized by Canadian companies. The same principles which have guided Canada in creating a largely automatic nationwide telephone network are today being applied by the members of the International Telecommunications Union, as they lay the foundations for a world-wide automatic telephone system. A system over which calls will be dialed with the same ease as they now are within the boundaries of North America and within parts of Europe. The linking of newer services such as television network transmission,

data transmission and picturephone, requires significant co-ordination in several vital respects as well.

Vital issues in international traffic handling are identified in Telecommission Study 3(e). This Report will give only a brief general comment.

Because of the role played by TAC and CN/CP and agreements with the telephone and telegraph services, international services between Canada and the USA are as convenient to the public as local services. Maintaining customer satisfaction on trans-border service is one of the issues considered to be vital. Newer services such as television network transmission, data transmission, data transmission and picturephone, require co-ordination in several vital aspects.

The various overseas countries have different standards of service depending on national policy, economics and efficiency of organization. As the improvement of telecommunications services in overseas countries adds to the satisfaction which Canadian companies can give to their customers, this is among the vital issues recognized by Canadian companies.

There are many international technical, operating, and tariff rate situations under review. Communications satellites and international computer communications are specific examples of current international consultative studies vital in their increasing participation in ITU international Consultative Committees, which are absorbing more skilled manpower resources than previously. The participation of COTC in the drafting of new international management arrangements for Intelsat is another.

2.2 Information Flow as a Vital Issue

All the categories of companies are quite naturally anxious to obtain vital information on foreign operations, manufacturing and consulting, and they also seek to pass on Canadian work to other countries.

For all the companies, information on future radio frequency assignments and interference considerations are an obvious necessity. Knowledge of the trend of standardization in operating, commercial and technological criteria for telephone, telex, and data services is also essential because the services used in other countries must be matched or interfaced in many detailed ways.

International routing and numbering require continual exchange of information as changes and additions are made. Up-to-date estimates of forecast demand are essential for planning each route. International consultants must be able to update their information in complete detail for the different kinds of engineering and management projects undertaken. Other standards and practices are frequently encountered.

The manufacturers are the most concerned with a broad approach to information flow. Telecommunications has one of the highest levels of technology, and one of the most rapid rates of development of any industry. Its future development is extremely sensitive to the information flow involved in innovation. This process covers the whole range of activities from the concept through research and development, to manufacture and distribution at home and abroad.

Information from outside Canada also has an effect on what Canadians want, and how much they will pay for it. Timeliness of information is vital to high innovation industry. The losses from an expensive development overtaken by new technology can be enormous. The life cycle of a product is already so short that it is difficult to pay for development during product life time. To this technological information must be added economic data. What will it cost to manufacture? Since production may be several years away this means a prediction on how the economy will move. What will people be prepared to pay for the service or product? What competition will there be?

It is vital to have all the information available at the time of the commitment. As the development proceeds the cost of incorporating new ideas becomes more and more prohibitive. Assuming then that a new system is chosen for development, what is the subsequent role of Canadian R & D organization? The project, if it is a major system, will involve dozens of professionals and may take five to seven years before it reaches the customer. Some 90 per cent of the information needed for the task will be available, and the R & D organization's role is to prepare it for profitable manufacturing.

As the extent of the innovation is increased, the risk increases. On the other hand, if innovation is limited, there is the risk that a more

aggressive entrepreneur will defeat the venture. There is thus an optimal range of innovation. The results of research effort can be estimated by observing developments in all parts of the world with experience serving as a guide.

When a competitor starts to sell an item information in it becomes public knowledge. At this time he will publish in order to maintain the prestige of his research group, and trade information with other groups. When literature on the item becomes available, information on its strengths and weaknesses begins to flow among the operating companies and consultants. There is a world-wide range of discovery available to the telecommunications innovator. The main limitations will be in local economics.

This matter of information sharing cannot be handled well by a system. The practical problem is knowing where to look for data, what data to select, and what to do with it. This is why a company or a country does research or exploratory development. Nearly all the information, technical, marketing, political, is available but in Canada our ability to get it to people who can use it is very poor.

The price for sharing in the world's information pool is to make a contribution to the pool. The publishing of Canadian papers in Journals of wide international distribution is an important basis step. Prestige in one field helps in others. It is important to be sufficiently competent in one field so that this prestige may be used to share in information in related fields. The paths are many and varied. Undoubtedly, contact between scientists who know each other's work is the most effective and the most stimulating. No laboratory is large enough to do more than a small fraction of the work in the field. This is particularly true in Canada where a total effort in telecommunications, private and governmental, is about one-tenth that of the Bell system in the USA. Considering a 20:1 ratio to the rest of the world, Canada has a great deal more to gain than to lose. Each piece of information gained may help avoid domination by groups whose scale of R & D might otherwise allow them to lead without fear of being overtaken.

Effective personal contact can often be made in committee work related to the several international societies and organizations. Standards committees can be doubly important. Some foreign standards have a negative impact on the Canadian telecommunications industry amounting, in many cases, to tariff barriers and work on this has not been utilized in Canada as much as it might be. Until quite recently no real importance was attached to this participatory activity. Even now only a handful of Canadian companies can afford to finance participation by employees, and within government it is an activity which has to be continually justified.

However, in Canada, by careful concentration, it is possible to lead in a few fields, and by the allocation of sufficient resources, to stay with the leaders in other selected research and development areas. The picture is complicated by a tendency to attempt to be all things. It is also complicated by national diffidence, lack of entrepreneurial drive, and lack of co-ordination of information available in different companies and government agencies. To compete you must have the best information and build it into the best product. To be effective we need centres of excellence in selected fields. Their prestige and expertise will allow Canada to trade in the international information system, and to use the information to good effect.

2.3 Vital Issues As Seen From a Consultant's Point of View

- 1) Telecommunication systems often constitute relatively small components of much larger systems (for example telecom portion of power grids, telecom portion of airports). Therefore what is done to encourage Telecom export must be closely correlated with other export activities (terms of financing, aid programs, missions) and the "package" concept should be recognized.
- 2) Telecom consultants, in seeking overseas business, find on occasion that a certain amount of consulting advice is being given by Canadian government departments and agencies at the request of overseas countries. Professional Consultants would like preference to be given by the Canadian government to supplying such advice on a commercial basis.
- 3) More and more overseas clients are interested in "turn key" jobs rather than separate engineering/supply/construction contracts. Financing is the key problem. Within large telecom turn key projects the consultants' part is small compared to the total supply and construction parts. Ad hoc consortia are needed but case histories show the difficulty of arriving at proper terms.
- 4) Acceptance of overseas contracts for consultant engineering work often depend on the ability to provide the required performance bonds. Because there is no equity involved — other than brain work — the provision of financial guarantees and bonding is very difficult for small operators.

2.4 Issues in Exporting of Canadian Telecommunications Products

General Problems

The primary difficulty facing all exporters of telecommunications equipment is that by far the majority of the developed countries protect their own manufacturing industry by non-tariff barriers of one kind or another. Invitations to bid are generally only issued to favoured domestic suppliers and foreign sources of supply, like Canada, are discouraged from entering into effective dialogue with the operating telecommunications companies which are usually government owned.

In Canada a more open policy is adopted, insofar as permitting and encouraging foreign suppliers to compete for domestic needs. This policy, while ensuring that Canadian operating costs are kept low, often removes the chance that a Canadian company might have in getting started in a new product line that would eventually lead to exports. The cost is too high to compete with foreign competition when the innovative and fixed expense of manufacture is amortized over the limited domestic market only, and he cannot afford to risk amortizing fixed costs over a larger world market when so many non-tariff barriers exist. Canadian government R & D incentives have helped to reduce this risk but it is still significant.

Problems Facing Subsidiary Companies

As far as markets in the developing countries are concerned a total systems approach is usually required. These countries are not yet ready to do their own systems synthesis and integration and although a total system capability exists in Canada it is usually fragmented due, at least in part, to the need for rationalization. The subsidiary companies are sometimes inhibited from joining export consortia in any continuing, permanent basis because they might be helping to increase the competition their parent companies would face in the markets concerned. In addition, anti-combines law in the country of the parent company sometimes inhibits integration of the subsidiaries whose parent companies might face court action in their own country. On the other hand business often flows to Canada, whenever the parent company obtains a turnkey project in a developing country, because of subsidiary/parent rationalization.

Problems Facing Canadian Controlled Companies

Even the largest of the Canadian controlled companies is small by world standards. The need for sales offices abroad, the need to establish manufacturing subsidiaries to overcome local non-tariff barriers and the magnitude of the risk on major export jobs create problems which companies in Canada will need the utmost ingenuity to solve. Only large multinational companies have the resources to tackle more than a fraction of the world's telecommunications needs. Many of the companies active in

Canada are part of multinational corporations and in this way Canadians can develop export expertise which would otherwise have to be learned the hard way, i.e., independently. From such a pool of expertise other Canadian companies can learn and our total degree of knowledge is thereby enhanced, leading to the eventual formation of multinational companies of our own.

Incompatibility of North American and European Telecommunications Equipment Standards

Because there was no need for Telecommunications standardization between North America and Europe before the use of voice-carrying submarine cable and the more recent COMSAT services, there are certain historical incompatibilities between the standards adopted in Europe and those adopted in North America. As well as the COTC, the Telephone Association of Canada has considerable interest in international technical compatibility affecting Canadian subscribers. As well, Canadian Manufacturing Companies seeking to export Telecommunication equipment to countries where there are European standards must face problems of incompatibility. In certain instances it would appear that incompatibilities may be difficult to eradicate, as they tend to protect equipment market areas.

Participation abroad in international standards work is beyond the financial and human resources of small companies. Even the largest companies find it difficult to keep up with the pertinent working parties and study groups of the ITU consultative committees, particularly the CCITT, whose meetings are now almost continuous the year round. The documentation and meetings on standards in the ISO and IEC, presents a similar problem (see Appendix II for a more detailed description).

SECTION 3 General Conclusions Concerning the Role of Canadian Companies

1. Operating Companies

- (i) In its role as Canada's overseas carrier the Canadian Overseas Telecommunication Corporation aims to provide telecommunications, including the newer services such as intercontinental television and data transmission, to the satisfaction of Canadian carriers and users and their foreign correspondents. For this role the COTC maintains planning and co-ordination of world-wide network operations with the international carriers of other countries, **always** seeking that Canadian investment in international facilities will be utilized to the greatest advantage.
- (ii) In their role of Canada's domestic operating industry, the telephone and telegraph companies aim to provide service to Canadian customers compatible with and connected to other North American telephone, telegraph, and data communications customers. In general, a Canadian telephone telegraph or data service subscriber can reach another Canadian or United States location with equal facility. Planning and co-ordination of service procedures and operations with companies and government agencies in the USA and abroad providing service to foreign customers are an important international role of the Canadian telecommunications companies.

2. International Consulting in Telecommunications

- (i) The role of Canadian telecommunications consultants in the international field adds to our balance of trade by exporting Canadian knowledge in a technology which has always been well advanced here due not only to our geograph, but to our social and economic history as well. The fact that Canadian innovation engineering, and management in telecommunications is well thought of abroad, and that Canada as a country is widely acceptable to many nations, means that telecommunications consultants find their international role closely interwoven not only with Canadian operating and manufacturing interests, but with the Canadian International Development Agency, the Department of Trade and Commerce of the Canadian government, the Department of Communications, and several other departments and agencies. Their work also brings them in contact with foreign government departments and agencies due to the many different forms of corporate structure providing telecommunication services abroad.

- (ii) In their role of identifying opportunities for work abroad, Canadian firms can benefit from extensive access to the information available in Canada on business developments in international telecommunications, and can keep in touch with other Canadian interests. Technical, financial, marketing, political and diplomatic support from all private industry and government sources available is welcomed because business is being carried out in competition with foreign consultants, some of which may be government supported. Competition is felt to be just as strong as that met by international marketers of telecommunications equipment.
- (iii) Canadian Government agencies undertake some international consultation on government to government requests. In certain cases, private consulting enterprises feel they could handle the job successfully and would like to be asked to do it on a commercial basis.
- (iv) Because of the amount of work in developing countries, telecommunications consultants are closely interested in the educational and training standards of telecommunications engineers and managers working there. It would seem that at present Canada is at a certain competitive disadvantage with regard to the important matter of attracting ITU fellowship recipients. In other countries where the operating administration is a government entity, training costs are paid by that government. But the costs of the job fellowship training in Canadian telecommunications operating companies have to be charged to the ITU as a fellowship expense.

3. Telecommunications Manufacturers

- (i) The international role varies from one Canadian telecommunications manufacturer to another, not only for reasons of size alone, but according to the content of research development and product standardization in the company program, and the nature of corporate relationships outside Canada. Only the largest Canadian companies can afford to participate abroad in drafting international recommendations, practices, and standards. The industry notes that as the importance of this type of activity has not received recognition by all the government agencies concerned, it cannot yet be considered a fully coherent national effort.

- (ii) Participation of manufacturing companies in international bodies recommending telecommunications standards is of considerable significance as an international role. The amount of effort that other countries put into this reflects the commercial desirability for products in a telecommunications export program to meet the standards of as many countries as possible.
- (iii) For this reason the standards adopted for new technology are not always selected on purely technological grounds. A case in point is the current difficulty between the countries on opposite sides of the Atlantic Ocean on design details for pulse code modulation data transmission and telephone switching systems.

SECTION 4 Recommendations of the Industry Participants to the
Government of Canada

1. It is recommended that further study be given to the problem of access to the growing quantity of information on international telecommunications planning, standards, projects, financing, operational developments and national policies. The exchange of information which took place during the Telecommission studies was useful, but already needs to be up-dated.
2. To this end there should be a joint review of international telecommunications projects by government agencies, consultants and manufacturers, at which some further clarification of their roles could be reached. For example, consultants seeking telecommunication business abroad have recommended that Canadian government agencies should examine whether they are in competition for the same work.
3. As an example of one means for up-dating, it is recommended that on the occasion of the World Plan Meeting, CCITT/CCIR to be held in late 1971, consideration be given to mutual briefing on the status of such projects by all Canadian companies and government agencies concerned, whether or not they participate directly at the World Plan Meeting.
4. It is recommended that Canadian loans for financing telecommunications hardware export should encourage, stipulate and make provision for related Canadian consulting services on an expanded basis, and that Canadian contributions to multi-lateral international financing of telecommunication projects retain as much flexibility as possible in respect to co-eligibility of Canadian consultants and associated manufacturers.
5. It is recommended that Canadian government agencies financing international telecommunication projects make modest provision for Canadian industry training costs in support of ITU fellow-ships to Canada for a few engineers and managers annually from developing nations.

CONTRIBUTIONS

Contributions received from representatives of participating organizations are gratefully acknowledged as follows:

Canadian Overseas Telecommunication Corporation - International Telecommunications Contacts.

Telephone Association of Canada - International Operating Companies, Conclusions and Recommendations.

Canadian Broadcasting Corporation - International Broadcasting Contacts

Department of Industry Trade and Commerce - Obstacles in Export Sales.

Canadian International Development Agency - Export Obstacles

Research and Development Laboratories Northern Electric Limited - International Information Flow.

Acres Intertel - Four Issues Important to Telecommunications Consulting Engineers.

Bell Canada - International Consulting, Conclusions and Recommendations.

In addition, this group prepared the following at the request of other Telecommission study groups.

Prepared for Study 2(g) - Manufacturing Standards, including CCITT/CCIR Recommendations.

Prepared for Study 3(b) - CCITT/CCIR World Plan and ITU Technical Aid.

Material printed in other final reports is not reproduced here but there is a relationship with other Telecommission studies, especially to:

Study 2(g) A description of Canadian telecommunications manufacturing industries, their size and growth, and international marketing of goods and services.

Study 3(a) International implications of telecommunications; the role of Canada in Intelsat and other relevant international organizations.

Study 3(b) Communications and the Canadian assistance programme for developing countries (hardware and software).

Study 3(e) An analysis of international telecommunications operations and the growth and handling of international traffic.

Study 7(f) Relationships between DOC and organizations internationally oriented.

The Origin and Effect of International Standards and Recommended Practices

1. C S A

The Canadian Standards Association (CSA) is Canada's clearing-house for standards. Founded in 1919, it is a non-profit, non-government association of Technical committees. CSA is the member Body for Canada in the International Electrotechnical Commission (IEC) and the International Standards Organization (ISO). The CSA rationale is safety of consumers. It will consider any request concerning fire, explosion, electric shock or other recognized hazard. Testing laboratories of the CSA are at 178 Rexdale Boulevard, Toronto. An early role of CSA was directed toward safety of electrical appliances and equipment and it established a voluntary Canadian Electrical Code in 1927. Under the Canadian Constitution safety legislation, however, is a matter for the Provinces, and the mandatory electrical codes differ somewhat from province to province. More recently, X-Ray radiation hazards from home colour T.V. sets was the subject of another voluntary Canadian standard which has been included in the mandatory electrical codes of various provinces.

The composition of this particular voluntary standards committee is interesting. It included representatives from manufacturers -- Northern Electric, Canadian General Electric, Canadian Industries Ltd., R.H. Nichols Co. Ltd.; from science -- the Canadian Medical Association, the National Research Council, and Atomic Energy of Canada Ltd.; from the federal government -- the Departments of Transport, Health and Welfare, and National Defence; from major users of electronic equipment -- Telephone Association of Canada, CN/CP Telecommunications, and the Ontario Hydro.

The provincial codes require that foreign manufacturers of colour T.V. sets or other electrical equipment destined for sale in Canada must comply with the regulations, and that the factories in which the products are produced be subject to "unannounced inspections by CSA inspectors". The Foreign manufacturer pays a fee if he wants to market in a Canadian province. But in practice, while this has been applied to consumer goods and heavy electrical equipment, telecommunications equipment, with which the public does not come into contact, has not been very much affected.

2. C G S B

The Canadian Government Specifications Board (CGSB), an interdepartmental agency of the federal Government which prepares standard specifications at government request. Its committees are composed of members from industry and government; some of these committees serves as Canadian national committees for the ISO Technical Committees working through the CSA procedure herein outlined. These arrangements are under review at the present time, the Department of Industry, Trade and Commerce and the CSA being of the opinion that governments in all countries and at all levels in Canada will become more and more concerned with standards for the goods they buy, codes for the safety legislation they administer, and with the effects of standards on trade, industry and the general welfare of their constituents. The Department of Communications is not directly concerned. It supplies one or two members on committees on radio equipment, at the invitation of the Directors of the CSA.

3. I E C

The Canadian National Committee of the International Electrotechnical Commission (CNC/IEC) is the official channel of participation in the work of IEC by all organizations and persons in Canada and operates under the auspices of the CSA. Their address is Secretary CNC/IEC, Canadian Standards Association, 77 Spencer Street, Ottawa 3, Ontario. IEC was formed in St. Louis in 1904 and has been active, except for the world war periods, and since that time, in the electrical and related fields. In 1947, IEC became affiliated with ISO as the electrical division of ISO, while maintaining its technical and financial autonomy. Secretarial work is handled by the IEC Central Office in Geneva, Switzerland. The texts developed and approved by a technical committee and ratified by at least four-fifths of the National Committees are published as standards recommendations. Like ISO Recommendations, IEC Recommendations are published for voluntary acceptance by industries, trades, and professions in any country. Canada's policy and participation in ISO and IEC technical work is decided by advisory committees composed of experts who represent the industries concerned through their trade and technical groups. These are the corresponding committees operating under CSA and CGSB procedure. Industry and government, therefore, decide whether Canada will participate in an ISO or IEC project. Through CSA, they send delegates to the international meetings. These delegates keep the advisory group, and CSA, informed on all technical matters.

4. I S O

Canada participates in the work of the International Standards Organization (ISO) through a permanent committee of twelve members known as the Canadian National Committee of the ISO (CNC/ISO). Their address is: Secretary CNC/ISO, Canadian Standards Association, 77 Spencer Street, Ottawa 3, Ontario. ISO was formed in 1946 to replace two predecessor organizations that had functioned before World War II. ISO is concerned with industrial and engineering standards other than electrical. The administrative work is handled by the General Secretariat, located in Geneva, Switzerland. A proposed standard developed and agreed upon by an ISO technical committee is called a Draft ISO Recommendation. It is circulated to all member bodies for acceptance, comment, or disapproval. When a draft recommendation has been accepted by 60 per cent of the members voting, it is sent for final approval to the Council. If approved, the draft then becomes an official ISO Recommendation. Acceptance and use of a Recommendation by members and their industries, trades, and professions are entirely voluntary. Use of ISO Recommendations is increasing. ISO Recommendations may be considered for revision at any time upon request by any member. Revisions go through the same steps as those for the original Recommendation. In both ISO and IEC, the work of developing and formulating international standards recommendations is carried on by technical committees. These committees may delegate some of their work to subcommittees or working groups. Representatives to technical committees and their sub-groups are appointed by the member countries on the basis of their technical interests.

Canadian delegates to the technical committees of ISO and IEC are nominated by their respective Canadian technical committees, recommended by the CNC/ISO and/or CNC/IEC, and accredited by the Canadian Standards Association.

The Department of Communications is not concerned with IEC or ISO beyond supplying one or two experts at the invitation of CSA.

5. C R T P B and DOC specifications for Radio Equipment

The Canadian Radio Technical Planning Board (CRTPB) since 1944 has made recommendations to the Government concerning the development and regulation of radio services in Canada. Their address is: 880 Lady Ellen Place, Ottawa, Ontario.

The 22 members of the Planning Board represent manufacturing associations, broadcasting associations, user groups including the Telephone Association of Canada (TAC) and engineering institutes, including the Institute of Electrical and Electronics Engineers (IEEE) (headquarters, New York). Although the Government makes no formalized reply to the recommendations, the Radio Regulations Branch takes them into account when drafting specifications and procedures issued by the Department of Communications.

Experience has shown that users generally tend to press for tighter and tighter specifications in order to guarantee a high degree of performance in their systems. On the other hand, manufacturers tend to press for more relaxed technical requirements in order to keep costs and prices to a minimum and thus increase their opportunities to sell in both domestic and export markets. Foreign owned subsidiary companies often import US or UK designs on equipment which will not meet Canadian draft requirements from the Department of Communications. These companies wish to avoid further expensive engineering development and, therefore, resist tighter limits on performance parameters.

An important difference between US and Canadian regulatory specifications is due to the fact that receivers, as well as transmitters, are regulated in Canada. The majority of companies in the Electronic Industries Association are subsidiaries of foreign companies and often believe that the stringent specifications drafted by DOC, particularly those pertaining to receivers, are unrealistic. This causes sharp differences of opinion in the technical task force work, since the final issuing of regulatory specifications has a direct bearing on cost and price of manufactured equipment. The situation is aggravated because users (who generally want tighter specifications) are in the majority in CRTPB (by number of associations). Although the CRTPB recommendations are not established on the basis of voting alone, there is a feeling among manufacturing companies (who actually have to develop equipment to meet the specifications) that their opinions are sometimes unjustly outweighed by the opinions of the users.

The interpretation of the meaning of the Radio Act is also a source of difficulty between the DOC and the industry. Since the Department is responsible for the administration of the Act, it believes it must uphold the highest possible standards of equipment performance in order to ensure satisfactory service to the user. This obviously involves specification

of parameters which have no bearing on the regulation of the frequency spectrum (receiver audio response and power output, hum and noise level, sensitivity, selectivity, etc.). Strict adherence to narrow or severe limits on such parameters for receivers causes hardship in the industry, particularly where portable equipment of limited range is involved. The price of such equipment has a very considerable effect on the quantity which can be sold, and overly severe restrictions on receiver operating parameters may preclude the manufacture or sale of such equipment.

The CRTPB believes that its work with the Department of Transport (and now the Department of Communications) over the years has contributed greatly to the quality of radio communication services in Canada. It believes it is performing an essential function in the interest of both the Department and the industry. It recommends that this work be continued and strengthened.

Concerning the Department of Communications Radio Standard Specifications for equipment, it is the opinion of the Electronic Industries Association of Canada that the equipment supplied to Canadian users by Canadian manufacturers meets higher standards than in most other countries, with the result that Canadian designed and manufactured equipment is too expensive to compete in export markets.

6. ITU Telegraph, Telephone and Radio Regulations

From its 1865 beginning in Paris as the International Telegraph Union (ITU), making it the oldest international organization of its kind, the International Telecommunications Union has grown to be a recognized United Nations Agency with 137 member countries. The Secretarial headquarters are at Geneva.

Canada is a signatory to the basic instrument or Convention of the ITU; concerning the ITU Regulations, which complete the Convention, (Montreux 1965 is the last), the Canadian position is:

Telegraph Regulations	- binding on Canada
Telephone Regulations	- Canada not bound
Radio Regulations	- binding on Canada
Additional Radio Regulations	- binding on Canada except for telephone aspects

These Regulations, which are quite extensive, are agreed upon at special conferences, of which the next will be the ITU World Administrative Conference for Space Telecommunications and Radio Astronomy.

The aims of the Union, in the name of which the Regulations are promulgated, are:

- a) effecting the allocation of the radio frequency spectrum;
- b) co-ordinating efforts to eliminate harmful interference;
- c) fostering collaboration among its members for the establishment of rates at levels as low as possible;
- d) assisting in the creation, development and improvement of telecommunication equipment and networks in new and developing countries;
- e) promoting the adoption of measures for ensuring the safety of life through the co-operation of telecommunication services.

7. C C I T T

The International Telegraph and Telephone Consultative Committee and the Radio Committee (CCITT)/(CCIR) are permanent organs of the International Telecommunications Union.

The duties of the CCITT are assigned in Article 14 of the ITU Convention as follows:

"To study technical, operating and tariff questions relating to telegraphy and telephony and to issue recommendations on them".

CCITT Recommendations (used world-wide) are re-published every four years, in French and English, and in Spanish, Russian and Chinese as required. There are now nine volumes of "Instructions", "Directives" and "Studies of Interest at the National Level", prepared in response to special questions.

The CCITT Recommendations now in force are arranged as follows in the White Book (1968).

- A Organization of the work of the CCITT, and collaboration with IEC and ISO.
- B Means of Expression (definitions, vocabulary, symbols, classification).

- C Unallocated.
- D Lease of International Telecommunications Circuits.
- E Telephone Tariffs and Operations.
- F Telegraph Tariffs and Operations.
- G Transmission: Lines, radio relay systems,
radiotelephone circuits.
- H Utilization of lines for telegraphy and phototelegraphy.
- I Unallocated.
- J Radio and television programme transmission.
- K Protection against interference.
- L Protection against corrosion.
- M Maintenance of telephone circuits and carrier systems.
- N Maintenance of programme and television circuits.
- O Unallocated.
- P Telephone transmission quality. Telephone installation
and local line networks.
- Q Telephone switching and signalling
- R Telegraph channels.
- S Alphabetical telegraph apparatus.
- T Facsimile telegraph apparatus.
- U Telegraph Switching.
- V Data transmission.

Related Standards Activities, Canada and Abroad.

Traditionally the working methods of the CCITT have been updated as required in order that CCITT Recommendations will be compatible with other standards activities. Manufacturers work through the International Standards Organization (ISO) and the International Electrotechnical Commission (IEC). The Canadian Standards Association (CSA) works with these, as it does with the United States of America Standards Institute (USASI). The Institute of Electrical and Electronics Engineers (IEEE), New York, also has

committees active in standardization work. The CSA-USASI standardization has not been linked in Canada with the CCITT study program but CCITT and ISO have been represented at each others meetings at the international level. In particular, a representative of ISO now attends all the study sessions of the CCITT dealing with data transmission. The electrical interface between computers and telecommunications lines is an example of continuing standardization studies. There has now been success in achieving an agreed CCITT-ISO alphabet for data transmission similar to the American Computing Society (ASCII) code. In addition to keeping ISO standards and CCITT Recommendations in line in this equipment area, this closer ISO-CCITT link at the study level has been useful as a channel for exchanging views on data system requirements for the future as between manufacturer of computers and supplier of telecommunications services and equipment.

Canadian ISO-CCITT Co-ordination at National Level

Recently we have had the beginnings of Canadian co-ordination at the national level on items for standardization involving both CCITT and ISO. The items concerned were the data transmission alphabet and colour coding of telephone cables. This co-ordination was at the request of the Director of the CCITT, with the object of saving time at the international level, and was successfully completed by correspondence.

When the CCITT was formed in 1956, the Department of Transport co-ordination on behalf of Canada was mainly concerned with Administrative T. & T. Conferences, Telegraph Regulations and operating procedures and tariff principles. Canada's attitude to future signature of the Telephone Regulations (the CCIF meeting which dealt with Telephone Recommendations was not attended by the Department) had also to be considered.

The rising engineering aspects of automated telegraph and telephone world networks led to the appointment of a full-time co-ordinator in 1963 as "an advisor to the Department on International Telephone and Telegraph Matters", replacing a part-time consulting engineer.

The current address is: CCITT Co-ordinator, International Branch, Department of Communications, 100 Metcalfe Street, Ottawa, Ontario.

8. C C I R

The International Radio Consultative Committee (CCIR) was established at Washington in 1927. The duties of the CCIR are assigned in Article 14 of the ITU Convention as follows:

"to study technical and operating questions relating specifically to radiocommunications and to issue recommendations on them".

The most urgent questions of concern to Canada have recently been listed as:

- technical factors governing the optimal use of the geo-stationary orbit;
- feasibility of frequency sharing between space and terrestrial services;
- direct television broadcasting from satellites.

Canadian Participation Objectives

Canada has started to participate as an observer at CCIR. In Warsaw in 1956 there were 12 delegates and at the last Plenary in New Delhi in 1970 there were 11 Canadians. Current objectives of participation are said to include:

- a direct voice in the spectrum utilization within assigned communication bands as well as an indirect voice in influencing changes to Radio Regulations pertaining to radio spectrum usage through the advisory role played by the CCIR at Radio Conferences;
- a direct voice in the development of preferred technical characteristics for radio systems to be used in fixed and mobile applications, broadcasting, monitoring, navigational aids, radio paging, communications satellites, radio relays, etc.;
- the securing of interference protection for our exceptionally large national telecommunications investments;
- the development of technical standards which will enhance the marketability of Canadian equipment;
- the demonstration of Canada's competence and leadership in the field of radiocommunications, which will assist Canadian industries in their drive to increase their exports to other countries.

There are 63 CCIR Recommendations which cover the following Radio fields:

- A Emission
- B Reception
- C Fixed Services
- D Mobile Services
- E Broadcasting, including T.V.
- F Radio Relay Systems
- G Propagation
- H Standard Frequencies and Time Signals
- I Monitoring
- J Vocabulary
- K Space Systems and Radio Astronomy.

CCIR CO-ordination in Canada

The Canadian National Organization for CCIR (CNO/CCIR) is composed of Study Groups subdivided into Working Parties, using the same model as the CCIR. The Working Parties -- which are composed of representatives from government departments, crown corporations, manufacturers and common carriers -- prepare the first draft of the Canadian documents. These draft documents are then submitted to the Study Groups concerned. They are then submitted to an Executive Committee of the CNO/CCIR for further approval. Finally, the Canadian documents are submitted to the Senior Committee of the Department of Communications for final approval before being sent to Geneva.

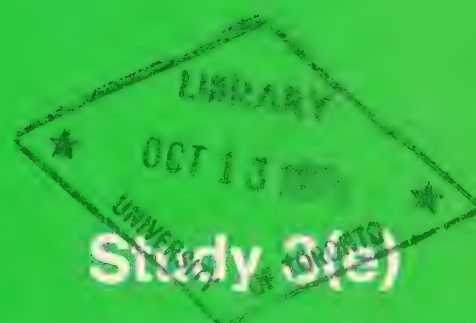
The Executive Committee of the CNO/CCIR was established in February, 1968, to bring together senior engineering and management representatives from government departments and industry to organize Canadian CCIR activity. These representatives are expected to have the authority necessary to assign people, time and other resources to this work and to approve the results. The address is: Chairman, CNO/CCIR, International Branch, Department of Communications, 100 Metcalfe Street, Ottawa, Ontario.

Operating Procedures, Tariff Rate Principles, and Settlement of Accounts

Recommended standards in these fields are not yet of wide concern to manufacturers and therefore, will not be discussed here. They are mentioned because the introduction of random access satellite circuits, the automation of international telephone and telex exchanges to the point of programmed computer techniques which provide billing and network supervision as well as switching functions, and the proposed World Data Network are likely to have repercussions on manufacturers planning for new products. CCITT and ISO are the current international sources of information.

There is as yet very little information on what Canadian Provincial codes may be applicable.

TELECOMMISSION



**An Analysis of International
Telecommunications Operations, and the
Growth and Handling of International Traffic**

The Department of Communications

201 15 18-7/113E

AN ANALYSIS OF INTERNATIONAL TELECOMMUNICATIONS
OPERATIONS, AND THE GROWTH AND HANDLING
OF INTERNATIONAL TRAFFIC.

TELECOMMISSION STUDY

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Information Canada
Ottawa, 1971

This Report was prepared for the Department of Communications by a project team made up of representatives from various organizations and does not necessarily represent the views of the Department or of the federal Government, and no commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

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 - 56. Appendix A - Telex and Telegrams routed via New York.
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 - 66. ANNEX - Some Aspects of Foreign Ownership and Interest.

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Information received

Canadian National/Canadian Pacific Telecommunications	- Brief
Canadian Overseas Telecommunication Corporation	- Brief
Commercial Cable Company	- Information as solicited
Electronics Industries Association (Canada)	- Comments
Trans-Canada Telephone System/Telephone Association of Canada	- Brief
Western Union International Inc.	- Information as solicited

TERMS OF REFERENCE

Terms of Reference

- 3 (e) An analysis of international telecommunications operations, and the growth and handling of international traffic.

Section 1 - Services and facilities

The intent under this heading is to identify the various carriers operating in Canada carrying international telecommunications and catalogue the services which are generally available between Canada and other countries. The points to be covered under this section are:

- a) Indicate which telecommunications services are provided between Canada and other countries, mentioning significant domestic services whose international connections are limited or not provided.
- b) As well as public services, such as telephone and telegraph, mention other services provided on full or part-time basis.
- c) Indicate the existing degree of automation and plans for its expansion.
- d) Indicate changes foreseen in international services, from the subscribers point of view.

Section 2 - International-Domestic Relationships (Note)

The intent under this section is to analyze the relationships between International and Domestic carriers concerned in providing international connections between users in Canada and in other countries, and to determine whether any changes should be made to further the interests of Canadian users.

- a) Details of the operating, tariff rates, and settlement of accounts obligations of Canadian carriers concerned in international operations.

- b) Details of the operating, tariff rates, and settlement of accounts obligations between the international and domestic carriers of connections between Canadian users and other countries.

NOTE: It was found expedient to deal only with obligations in this section as information about operations, rates and settlements is included in Sections 1, 5 and 6 respectively

Section 3 - Size and Nature of Market

Intent is to attempt a 5-year forecast of the market for International services between Canada and other countries. Points to be covered include:

- a) Data showing current traffic volumes and Canadian revenues in 1968 for various services.
- b) Estimates of the growth rate per year of each of the services listed in respect to (a) above and any new services foreseen.
- c) Description of changes foreseen in customer demands.

Section 4 - Investments

Intent is to examine the aggregate amount of investment each carrier has made which is directly related to the provision of international service. Points to be covered include:

- a) Indicate the present capital investment attributable to the provision of international service by each of the international and domestic carriers concerned.
- b) Indicate the amounts which are expected to be included in capital budgets for expansion of the various services for each of the ensuing 10 years.

Section 5 - Rates and Tariffs

Intent is to determine the extent to which rate structure for international services are fair and equitable to Canadian users. Points to be covered include:

- a) Describe the principles followed in the determination of rates and tariffs for international services.

- b) Describe how international rates and tariffs from Canada to other countries are co-ordinated with domestic carriers and foreign international carriers.
- c) Indicate the extent to which international rates and tariffs offered by Canadian telecommunications entities are competitive with foreign international carriers and giving details of any differences.
- d) Indicate changes in customer rates and tariffs foreseen for the next 5 years.

Section 6 - Settlements

Intent is to determine the extent to which present settlements and division of revenue for international services are in the best interests of Canada. Points to be covered include:

- a) Describe present settlement of accounts and division of revenue,
 - (i) between Canadian international carriers and foreign inter-connecting carriers.
 - (ii) between Canadian international carriers and Canadian domestic carriers.
- b) Indicate whether changes are foreseen, due for example to new technology (the exact route traversed by a call may not be known due to automatic switching; another case, routes of different performance may be available on demand).

INTRODUCTION

AN ANALYSIS OF INTERNATIONAL TELECOMMUNICATIONS
OPERATIONS AND THE GROWTH AND HANDLING OF INTERNATIONAL TRAFFIC

To clearly describe existing international telecommunications service arrangements, it is necessary to deal separately with two distinctly different situations.

Accordingly, this Report is compiled under two different headings, namely, International No. 1 and International No. 2.

The following table illustrates this division:

	<u>International No. 1</u>	<u>International No.2</u>
<u>CANADA to:</u>		
Continental U.S.		X
Mexico		X
Alaska		X
Hawaii		X (1)
U.S. Possessions such as Puerto Rico		X (1)
St.Pierre/Miquelon		X (2)
All Other Countries	X	
<u>NOTE 1:</u> Excepting Telegraph service which is handled under International No. 1.		
<u>NOTE 2:</u> Excepting Telephone service which is handled under International No. 1.		

The following International overseas carriers provide service as described in the report:

Canadian Overseas Telecommunication Corporation (COTC),
a Federal Government Corporation.

Commercial Cable Company (CCC), a subsidiary of the
ITT World Communications Inc. - U.S.

Western Union International Inc., (WUI), a branch of
the Western Union International Inc. U.S.

In addition, as described in this report, Canadian telephone companies, Canadian National and Canadian Pacific Telecommunications participate in the provision of International No. 1 service and operate directly with U.S. carriers in the provision of International No. 2 service.

Throughout this report, reference is made to the Trans-Canada Telephone System (TCTS). It is to be understood that this embraces facilities provided by the following entities forming that System:

British Columbia Telephone Company operates generally in the province of British Columbia. British Columbia Telephone Company is shareholder-owned with 50.31% of common stock owned by Anglo Canadian Telephone Company of Montreal. Anglo Canadian is a wholly-owned subsidiary of General Telephone and Electronics Corporation, New York, N.Y.

Alberta Government Telephones, Saskatchewan Telecommunications and Manitoba Telephone System operate in their respective provinces and are owned by the provincial governments.

Bell Canada serves most of Ontario and Quebec, and some parts of Labrador and the Northwest Territories. Bell Canada is shareholder-owned; in the order of 98% of their common stock is held by Canadians.

Maritime Telegraph & Telephone Co. Ltd. serves the province of Nova Scotia and through a subsidiary, The Island Telephone Company Limited (56% owned), the province of Prince Edward Island. The company is shareholder-owned, with 51% owned by Bell Canada. Nova Scotia government limits shareholders to voting 1,000 shares regardless of any greater number held.

The New Brunswick Telephone Co. Ltd. serves the province of New Brunswick. The company is shareholder owned with 51% owned by Bell Canada.

Newfoundland Telephone Company Limited serves a portion of Newfoundland. For all practical purposes, this is a subsidiary of Bell Canada.

Member companies of the Telephone Association of Canada, in addition to TCTS members mentioned above are Québec-Téléphone, Edmonton telephones, Northern Telephone Ltd., Island Telephone Company and Ontario Northland Communications.

Other principal national carriers are:

Canadian National Telecommunications (CNT), a department of the Federal Government's Canadian National Railways. CNT operates throughout Canada in conjunction with Canadian Pacific Telecommunications.

Canadian Pacific Telecommunications (CPT), a department of the Canadian Pacific Railway whose shares are owned in the majority by Canadians. CPT operates throughout Canada in conjunction with Canadian National Telecommunications. This operating consortium is referred to throughout this report as CN/CP.

SECTION I

EXTENT OF FACILITIES AND SERVICES

PUBLIC TELEPHONE SERVICE

Telephone services to about 200 countries and their overseas possessions and territories are provided through the facilities of the Canadian Overseas Telecommunication Corporation in its international gateway switching centres in Montreal and Vancouver, which in turn interconnect with the global networks of submarine telephone cables, and more recently, satellite circuits linking all continents and providing high usage routes between the major centres of the world.

The rapid growth of Canada's international telephone traffic in the past two decades since COTC became operational, can be traced in large measure to Canada's participation in the development of the world-wide high capacity submarine telephone cable complex starting with the first Trans-Atlantic link TAT-1 which was laid and put into service in 1955-56. This was followed by CANTAT and ICECAN Cable in 1961, 1962 respectively; the COMPAC Trans-Pacific Cable in 1963; in South East Asia (SEACOM) 1966; and currently to Bermuda (CANBER).

The strategic central location of Canada in the vast Commonwealth telecommunications network extending from Europe through to Australia and South East Asia has been the basis for the expansion of Canada's overseas international telecommunication services.

In recent years the advent of communication-satellite technology, and the participation of Canada in the Global Commercial Communication Satellite System (INTELSAT) has served to augment and complement the expansion of overseas telephone service by means of satellite circuits via the Canadian east coast earth station owned and operated by COTC. The development of a Canadian west coast earth station is in an advanced planning stage, and the opening of new foreign earth stations indicates the constantly increasing use of satellite communications which offer the addition facility of multi-point destinations.

Although a few high frequency (HF) radio circuits are still in existence, practically all HF services will be replaced by new cable and satellite communications facilities within the next few years.

While the bulk of International No. 1 traffic is handled through COTC gateways in Montreal and Vancouver, other traffic streams, for practical reasons, to some 35 countries identified in Appendix D are routed via U.S. gateways.

Calls are extended from the CCTC gateway offices to the Canadian user over facilities of the Trans-Canada Telephone System (TCTS) members and their connecting companies.

External submarine cables landed in Canada and operated by International overseas carriers are licensed under the Telegraphs Act. Radio facilities used in connection with external telecommunications are licensed under the Radio Act. Both Acts are administered by the Minister of Communications.

Handling

All calls are handled and ticketed by TCTS operators with the exception of those of the countries shown in Appendix D and, in all cases, billing is rendered by the local telephone company.

Public telephone service between Canada and some 37 overseas points is handled on a semi-automatic basis involving one gateway operator. Manual operation involving at least one additional operator beyond the gateway is used in connections to the other (163) countries.

It is likely that most semi-automatic streams will be converted to fully automatic operation (direct dialling by subscriber) by 1975. The latter service requires a large number of circuits to ensure no-delay service as recommended by the International Telegraph and Telephone Consultative Committee (CCITT) and should not be made available until

- (1) Canadian domestic telephone companies provide certain equipment (e.g. registers),
- (2) no delay international facilities are provided (e.g. adequate circuitry),
- (3) no delay facilities in the foreign countries are provided,
- (4) the problems of tone differences are resolved.

Inadequate international or domestic facilities in any portion of the route between Canadian and foreign customers will cause the customer's call to revert to an operator as well as causing the overloading of automatic equipment by unsuccessful calling attempts, both of which will have an adverse effect on other classes of business.

COTC equipment now in place allows for conversion from semi-automatic to fully automatic operation without any modifications.

Direct subscriber dialling from overseas points into the national network is technically possible through existing COTC facilities but appears to be limited by technical and/or economic considerations of foreign originating countries or of countries through which traffic of the originating country must transit.

All operating procedures are determined by TCTS in conformity with the recommendations of CCITT of which the Telephone Association of Canada (TAC) is a member, and taking into account the limitations on classes of service (person or station, collect, credit card) agreed to by all concerned.

The allocation of circuits between Canada and overseas countries to cope with traffic peaks (e.g. division of circuits at Christmas) is arranged through COTC.

TCTS provides operator assistance when required for traffic transiting Canada. This assistance is normally limited to establishing the connection on request without any responsibility for timing the call.

Service Offerings

Within the International No. 1 public telephone service, conference call features can be made available at supplementary rates and charges.

Datel 600* (subscriber dialling) service based on CCITT Recommendations, is in operation via COTC between Trans-Canada Telephone System customers and customers in Switzerland and Britain at a guaranteed speed of 600 bits per second. It is expected that this service will be extended in September 1970 to CN/CP Broad Band Exchange Service customers and to all countries with which COTC has made appropriate arrangements.

Dataphone* service based on North American standards (not compatible with Datel 600) is another service offering by TCTS.

- * alternate use of public telephone service for transmission of data as well as the spoken word by subscribers having the necessary apparatus.

PUBLIC MESSAGE TELEGRAPH SERVICE

This service is available directly through facilities in Canada of the COTC, WUI, and CCC to all countries in the world, and indirectly to some countries that can only be reached through interconnections between COTC Montreal and RCA New York. (See Appendix A) Traffic to Canada follows the routes of the above-mentioned carriers.

Telegraph traffic routed through COTC is connected directly to the COTC message switching centre in Montreal, thence on international voice frequency multi-channel systems over the cable and satellite facilities described under telephone services.

CCC telegraph traffic is handled over two (2) Trans-Atlantic cable circuits leased by that company from COTC. These circuits are connected to the CN/CP domestic network, i.e. one between Montreal and CCC in London is terminated in and operated for CCC by CPT Montreal, and one between Toronto and CCC in London is terminated in and operated for CCC by CNT in Toronto. CCC does not directly operate any offices in Canada.

WUI is licensed by the Department of Communications to operate a submarine cable between Canada and the Azores where connection is made to reach European countries. They are also licensed to operate two parallel submarine cables between Bay Roberts, Newfoundland, and Hammil, New York, for "through" service. These cables, according to the licence, would enable WUI to exchange traffic destined for or originated in the United States via these cables to interconnect to their Azores cable and/or to circuits leased by them from COTC.

The introduction and use of automatic service by Canadian carriers depends not only upon the extent of automatic facilities available in Canada but also that of the distant countries.

Distribution and collection of traffic between the international carriers and national users of the service is handled in various ways.

CNT and CPT are the only domestic originating and terminating telegraph service carriers in Canada that handle international telegraph traffic, excepting that COTC and WUI each operate a telegraph office in Montreal for users in that city. They exchange all other traffic with CNT and CPT.

CNT switches international traffic directly from its offices of origin in Canada through a fully automatic computer switch in Toronto to the appropriate carrier*.

CPT switches international traffic directly from its offices of origin in Canada through a semi-automatic switch in Montreal to the appropriate carrier*. Fully automatic computer switching is planned for 1971.

Various classes of telegraph service are available. Each class reflecting differences in tariff and speed of handling. The classes are: - Ordinary, Urgent, Government, Priority Government, Press, Urgent Press, RCT, Urgent RCT, Letter Telegram and Social Letter Telegram. The last is available only between places in the Commonwealth. Money Transfer Telegram service is not available on International No. 1.

WUI also leases several Trans-Atlantic circuits from COTC. These are connected to the CN/CP domestic network, i.e. one (1) between Toronto and WUI in London is terminated in and operated for WUI by CNT in Toronto, and two (2) between Montreal and WUI in London are terminated in and operated by WUI in Montreal. WUI has no plans at this time for automation.

Messages to countries served exclusively by one international carrier are handed to that carrier by the domestic carrier at the appropriate gateway. Customers in Canada may specify that messages be carried by any International carrier licensed to provide service from Canada to the destination country; these are called "routed" messages. All other messages are known as "unrouted" traffic which is shared according to agreements between the international and domestic carriers.

- * Interconnection for traffic exchanged with COTC is Montreal, where relay in both directions is through a fully automatic computer switch operated by COTC. Interconnection for traffic exchanged with WUI via the computer switch in Toronto and with CCC via the CPT switch in Montreal is manually relayed in both directions by those companies in their London (England) offices.

TELEX AND TWX SERVICE

Telex service is available between Canada and most overseas countries in the world through the facilities of the COTC at the Canadian international gateways in Montreal and Vancouver. Direct normal routings provided by this service are listed in Appendix B. Indirect normal routings to over 100 other countries and territories are provided via COTC and overseas exchange facilities. In some cases, traffic between Canada and certain other countries is normally routed via interconnection between COTC and U.S. carriers, (Appendix A).

Almost all Telex service is now provided on a semi-automatic basis by COTC. The few remaining manual circuits are in the process of conversion during the present transitional period. Fully automatic service, including additional direct routes, is planned by COTC for late 1970. CNT and CPT are the only domestic carriers that provide Telex in Canada. All of their 20,000 subscribers have access via COTC facilities to all countries having Telex service.

A teletypewriter exchange (TWX) service is provided by TCTS. This subscriber-dialled service employs apparatus differing from that used in Telex. For international working, converter equipment provided by COTC must be used because speed and codes differ.

OTHER SERVICES

General

For all the following services both TCTS and CN/CP networks can provide the national extensions in Canada beyond the COTC overseas terminals in Montreal and Vancouver.

Television

Available through COTC on an occasional-use basis to countries in the Atlantic and Pacific zones of coverage by the INTELSAT satellites having operational earth stations, or operating agreements with other earth station owners (Appendix C). Also available on a double satellite-hop basis to Indian Ocean countries.

Terrestrial facilities for picking up or distributing TV presentations connect to the COTC satellite earth station at Mill Village, N.S. for Trans-Atlantic telecasts.

Pacific telecasts involve the use of terrestrial connections to the U.S. satellite earth station at Jamesburg, California.

Program (Sound)

Available through COTC facilities as described above under "Television". Additionally program facilities can be provided via COTC submarine cables crossing both the Atlantic and Pacific regions.

High Speed Data

Broadband data service is available through COTC facilities on a full-time private line leased basis at most bandwidths, e.g. Group (40.8 Kbits), Super Group (230.4 Kbits), etc., to countries referred to under the above paragraph relating to television. No public demand has yet arisen.

Switched Data Service

This is a direct-distance subscriber dialling service which provides for subscriber-to-subscriber transmission of digital or analog signals at speeds up to 4800 bauds. Within Canada, this service is offered by CNT and CPT jointly as Broad Band Exchange Service. It will also be available from the TCTS before the end of 1970 as Multicom-medium speed. No demand has yet arisen internationally for switched data service at speeds in excess of 2400 bauds.

Narrowband Data

Available through COTC facilities on a full-time private line leased basis in varying bandwidths, giving capability of speeds from 60 b.p.s. to 4800 b.p.s. to all countries referred to under the paragraph dealing with television, excepting that in most cases for Indian Ocean areas the service would be provided via cable with only one satellite extension involved.

Other Private Line Service

COTC offers, on a full-time basis, private line voice service and dedicated private line circuits suitable for narrative and for data transmission in bandwidths from $\frac{1}{4}$ of 50 bauds to 4800 bauds.

Photo Telegraph Service

Available through COTC facilities at Montreal or Vancouver. Domestic carriers are not involved, as collection and distribution is handled by COTC usually by mail.

CHANGES FORESEEN (OTHER THAN GROWTH)

Public Telephone Service

No additional changes in operating procedures are foreseen as the outcome of likely conversion of some semi-automatic operations to fully automatic by 1975.

TCTS envisage the possible introduction of Wide Area Telephone Service (WATS) and/or teletype service, and

- (a) a requirement that the grade of international service become increasingly similar to the domestic (Canadian) and Canada-U.S. service.
- (b) an increased demand for automation, i.e. International Direct Distant Dialling (IDDD), noting that, as it will be a costly service to provide for a relatively small volume of calls, IDDD must be introduced slowly and on a progressive basis, with careful selection of terminating countries and perhaps even heavy users.

Public Telegraph Service

COTC foresees no additional changes in operating procedure. CN/CP foresee no significant changes. CPT plan to implement fully automatic computer switching in 1971.

Telex

COTC envisages conversion from semi-automatic to full automatic operation by late 1970, and extension of service to several additional countries.

TV, Program, Broadband and Other Private Line Services

COTC foresees a greater demand for data and leased line services by 1972.

CN/CP anticipates that, as a result of the increasing trend toward computer-to-computer communications in Canada, there will be a growing demand for higher-speed international circuits at speeds up to 9600 bauds.

TCTS foresees an increase in demand for data service. Plans are under way to provide a wider range of switched data services which could be available to COTC for extension overseas.

PUBLIC TELEPHONE SERVICE

Extent

Public telephone service between Canada and continental U.S. including Hawaii, Alaska and U.S. overseas possessions such as Puerto Rico, and between Canada and Mexico is provided, particularly on the North American continent, by extensive trans-border facilities employing a variety of wires, cable and radio. The latter includes microwave as well as troposcatter systems licensed under the Radio Act by the Minister of Communications.

Several Canada-U.S. border crossings are established for calls between Canada and continental U.S. and the State of Alaska. These gateways, except the latter, are also used for the exchange of calls between Canada and Mexico, Hawaii, and U.S. overseas possessions, such as Puerto Rico, all of which entail further routing through designated international gateways in the U.S.

Trans-border facilities are provided by a wide variety of telephone service entities, i.e. B.C. Telephone Co., Alberta Government Telephones, Saskatchewan Government Telephones, Manitoba Telephone System, Bell Canada, New Brunswick Telephone Company and Canadian National Telecommunications.

Public telephone service between Canada and the United States in North America, and between Canada and Mexico, through the present integration of Canadian and U.S. domestic networks, permits, in most cases, direct dialling by subscribers. Exceptions exist with respect, for example, to remote areas and technically under-developed small rural company service areas in both countries.

Statistics indicate a very high percentage of automation. Canadian domestic telephone entities are continuing to add Direct Distant Dialling (DDD) capability in the few areas not yet so equipped.

Ticketing and handling of calls is carried out through automated TCTS facilities.

Service between Canada and Alaska is semi-automatic involving operator assistance. Facilities of Canadian National Telecommunications and the B.C. Telephone Company connect at Canada-U.S. border points with Alaskan facilities. Operator gateways are Vancouver (B.C. Tel.) Edmonton, Alta. (AGT) and Whitehorse, Y.T. (CNT). Ticketing and handling of calls is done by the originating operators.

Service between Canada and Hawaii and several U.S. overseas possessions such as Puerto Rico is also semi-automatic operation requiring operator assistance. Customer dialling of calls to Hawaii is planned for January 1972.

Trans-border facilities between Canada and continental U.S. are used for routing calls via U.S. international gateways to and from these points. The direct Canada-Hawaii COMPAC cable, owned and operated by COTC is not used at present, but after mid-1971 the current switching capability situation may change so that direct Canada-Hawaii circuits will be economical to operate.

Ticketing and handling of calls is done by Canadian operators of TCTS.

Service Offerings

Within International No. 2 public telephone service, conference call features can be made available at supplementary rates and charges. Dataphone service at speeds up to 2000 bits per second can be provided between Canada and continental U.S.

PUBLIC MESSAGE TELEGRAPH SERVICE

The Final Protocol (not objected to by Canada) included the following statement by the United States of America at the time of the signature of the International Telegraph Regulations (Geneva - 1958):

"The United States of America formally declares that the United States of America does not, by signature of the Telegraph Regulations (Geneva Revision, 1958) on its behalf, or by ratification thereof, accept any obligation in respect of the application of any provision of the Regulations to service within the United States with respect to telegrams between the United States, on the one hand, and Canada, Mexico, and Saint-Pierre and Miquelon Islands, on the other hand, and to the rates applicable to such service."

CPT and CNT are the only domestic originating and terminating telegraph service carriers in Canada which handle International No. 2 telegraph traffic.

Service between Canada and continental U.S. (except Alaska) and Mexico is exchanged by CNT and CPT with the Western Union Telegraph Company. The point of interchange is Minneapolis, Minn., where traffic is relayed in both directions through a Western Union semi-automatic store-and-forward switching machine.

Service between Canada and Alaska is via a border crossing near Whitehorse, Y.T., where CNT alone interconnects with the U.S.-owned Alaska Communications System currently being acquired by the Radio Corporation of America (RCA). The operation is manual.

Service between Canada and St. Pierre/Miquelon is handled through COTC in Montreal.

Various classes of service in International No. 2 are available, each reflecting differences in tariff and speed of handling, i.e. Full Rate, Night Letter, Press, and Money Transfer Telegrams.

Telex

CPT and CNT are the only domestic carriers that provide Telex in Canada. Fully automatic Telex (direct subscriber dialling) is available between some 20,000 Canadian Telex subscribers and Telex subscribers in continental United States and Mexico by way of a CN/CP interconnection with Western Union in the United States. Hawaii and U.S. possessions such as Puerto Rico are serviced under International No. 1.

Service between Canada and Alaska is being arranged. Service between Canada and St. Pierre/Miquelon is not yet available.

Telex calls from Canada to Mexico are made by dialling access code "00" followed by the called subscriber's number.

TWX

This service is provided to some 4000 subscribers in Canada through Canadian telephone companies and is available on a fully automatic basis between Canada and continental U.S. (excluding Hawaii, Alaska and U.S. possessions such as Puerto Rico) by way of the automatic DDD network.

Canadian TWX calls to and from Mexico are routed via CCTC Montreal for conversion and onward transmission as Telex via the CCTC-RCA New York interchange.

General

Inter-working between Telex and TWX networks in Canada is not available. Blocking arrangements exist to prevent Canadian Telex or TWX subscribers from reaching overseas points via the U.S. networks. When Western Union completes its acquisition of U.S. TWX, it will institute a form of inter-connection between U.S. Telex and U.S. TWX. Unless Western Union sets up specific blocking arrangements this will have the effect of permitting a Canadian TWX subscriber to access the U.S. Telex network and a Canadian Telex subscriber to access the U.S. TWX network.

OTHER SERVICES

Television

Facilities of both the Trans-Canada Telephone System and of CNT/CPT are available for telecasts on an occasional basis as well as on a contract basis. Currently this service is made available by the former under contract with CBC and CTV organizations.

Program (Sound)

Same as for "Television" above.

Switched Data Service

For this service between Canada and continental U.S. (excepting Alaska and Hawaii) CN/CP through interconnection with the Western Union in the U.S., offer Broad Band Exchange Service, i.e. a direct-distance subscriber dialling service for digital and analog transmissions for speeds up to 4800 bauds on a fully automatic basis. The capability of fully automatic switching of circuits in the 8, 16 and 48 kilohertz bandwidth is also provided. Through interconnection with U.S. telephone companies, TCTS offers voiceband switched data service up to 2000 bits per second over the switched network. TCTS offer in Canada, Multicom-high speed service at 19.2, 40.8 and 50 kilobits per second.

Private Line Service

TCTS through interconnection with U.S. telephone companies, offers private line voice and private line teleprinter services.

CN/CP through interconnections with Western Union and the Alaska Communications System offers private line voice service between Canada and U.S. including Alaska, but excluding Hawaii and other U.S. possessions such as Puerto Rico. Through similar interconnections CN/CP offers private line teleprinter service between the same areas.

Where the customer uses such private line leased facilities for data transmission purposes, he may provide his own data transmission and receiving equipment.

CN/CP and TCTS offer circuits suitable for narrative and data transmission which are available in varying bandwidths, giving capability of speeds from 50 to 4800 bauds. Teleprinter equipment is available at speeds of 60, 75, 100 and 150 w.p.m. Service is furnished for periods of 4, 8, 12 and 24 hours per day, or from five to seven days per week.

19.2, 40.8 and 50 kilobit-per-second service can be supplied using the spectrum of 6, or 12 standard voice channels.

Automatic Hot Line voice service is provided by CN/CP in conjunction with Western Union between Toronto and New York and between Montreal and New York. This is a 2-point service provided by concentrator-type switching equipment interconnected by common intercity trunks.

CHANGES FORESEEN (OTHER THAN GROWTH)

Public Telephone Service

TCTS foresees an increased demand for automation and Extended Direct Distant Dialling (EDDD), i.e. person-to-person, coin stations, etc., also the possible introduction of Wide Area Telephone Service (WATS) and/or telescript services.

Public Telegraph Service

No significant changes are foreseen by CN/CP. CPT plan to implement fully automatic computer switching in 1971.

Telex

Extension of service to Alaska is foreseen. No other significant changes are anticipated.

TV, Program, Broadband and Other Private Line Services

TCTS see an increase in demand for data service. CN/CP anticipates that, as a result of the increasing trend toward computer-to-computer communications in Canada, there will be a growing demand for higher-speed international circuits operating at speeds up to 9600 b.p.s.

SECTION II

OBLIGATIONS

Canadian Overseas Telecommunication Corporation (COTC)

The COTC Act of 1949 (as amended in 1963 and 1969) states that the Corporation is established for the following purposes:

- (a) to establish, maintain and operate in Canada and elsewhere external telecommunication services for the conduct of public communications;
- (b) to carry on the business of public communications by cable, radiotelegraph, radiotelephone or any other means of telecommunication between Canada and any other place;
- (c) to make use of all developments in cable and radio transmission or reception for external telecommunication purposes as related to public communication services;
- (d) to conduct investigations and researches with the object of improving the efficiency of telecommunication services generally; and
- (e) to co-ordinate Canada's external telecommunication services with the telecommunication services of other nations.

Provision of service, operations, etc. are in accordance with the ITU Regulations and appropriate Recommendations.

COTC is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine cables for handling terminating and through traffic. COTC is also licensed under the Radio Act to maintain and operate various radio facilities including the satellite earth station at Mill Village, N.S.

COTC is jointly licensed with ET & T relative to 12 radio stations between and including Sydney Mines, N.S. and Spruce Lake, N.B. which (together with a station at St. George, N.B. licensed only to ET & T) form the microwave system for traffic to and from the TAT-1 and TAT-2 cable heads at Sydney Mines. The COTC portion of the microwave system ends at Spruce Lake and the extension of TAT-1 facilities into COTC facilities at Montreal is via a different microwave system.

These licences include special conditions such as to require the Undertaking given by various companies and set out in detail under the heading "Western Union International Inc." at subsequent paragraphs in this report.

Eastern Telephone and Telegraph Company (ET & T)

ET & T is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine Trans-Atlantic cables (TAT-1 and TAT-2) for handling through traffic, between U.S. and Europe via Canada.

In addition to the 12 radio station licences issued jointly to COTC and ET & T as described previously under COTC, ET & T are also licensed to operate and maintain a station at St. George, N.B. through which the U.S. portion of the TAT-1 and TAT-2 cable facilities are extended into the United States.

Western Union International Inc. (WUI)

WUI is licensed by the Minister of Communications under the Telegraphs Act to operate and maintain external submarine cables; one between Canada and Azores and two between Canada and the U.S., for handling terminating and through telegraph traffic.

The following UNDERTAKING has been given by WUI:

"In order that Western Union International, Inc. may use through circuits transiting Canada leased or made available under an indefeasible right of user basis in the TAT-1 and TAT-2 systems pursuant to the provisions of the Canadian licenses issued in connection with the microwave portion of such system, Western Union International, Inc. covenants as follows:

"That it will not handle or permit to be handled any communication traffic of any kind to and from Canada on circuits leased to it or made available under an indefeasible right of user basis in TAT-1; TAT-2; or effective July 1, 1960, on any circuits which it may own, in whole or in part, or lease or have available under an indefeasible right of user arrangement in any other telecommunication facility terminating in or transiting the United States without the specific authority of the Minister of the Department of Transport (now Department of Communications)".

Additionally, the following companies have each given the same UNDERTAKING:

Commercial Cable Company
RCA Communications Inc.
The French Cable Company
Press Wireless Inc.

Trans-Canada Telephone System (TCTS)

TCTS members have undertaken to coordinate their operations and those of other domestic carriers, in providing connections between users in Canada and other countries, so that the same standards and procedures apply across Canada, regardless of the points in Canada from which the calls originate. As far as conditions permit, Canadian users calling to other countries are provided service similar to that to which they are accustomed when making toll calls within Canada's borders. In the case of service to the U.S. and its possessions, TCTS follows practices and maintains standards of service which are common to North America. Almost identical classes of calls and billing options such as collect, bill to third number, station and credit card are provided everywhere in Canada and the U.S.

TCTS undertakes to make available to users in other countries who call Canada, generally the same operating methods and standards of service which are in effect for domestic Canadian service. This applies particularly to the U.S. and its possessions where users and operators find that auxiliary services such as directory assistance and intercept are virtually the same in Canada and the U.S. In other cases, directory assistance service for obtaining numbers, intercept service for obtaining information on the status of numbers and assistance service in establishing connections when required, are available to foreign operators.

Canadian National Telecommunications (CNT) and Canadian Pacific Telecommunications (CPT)

These carriers are obligated under various inter-carrier Agreements, Memorandums of Understanding, etc. to which reference is made under Section V (Settlements) International No. 2.

They are also obligated under the Railway Act (Canada), the Radio Act (Canada) and under the International Telegraph Regulations (Geneva 1958) as signed by Canada.

SECTION III

SIZE AND NATURE OF MARKET

General Comments

Customer demands are seldom expressed with clarity and real telecommunication needs cannot therefor be assessed on the basis of such expressed demands since they may have little or no significance toward satisfactory results.

Market surveys carried out under contract by non-operating firms have in general proved rather inconclusive and unproductive.

Accordingly, experts of telecommunications entities are obliged to suggest whatever operational and technical solutions appear to be the most appropriate in view of the importance and urgency attached by customers to their need for the exchange or distribution of information.

Plans made by telecommunications entities for expansion of their facilities are essentially in the nature of a forward-looking business risk based upon careful appreciation of a wide variety of factors including social and economic considerations, technical traffic measurements of circuits and systems, collaborative discussions with other carriers and a constant evaluation and interpretation of demands implied or indicated by users in the way of their conferences, deliberations and discussions.

The following tables provide information about traffic volumes and revenues.

NOTE: See also explanatory information under the heading "Growth Rates" and the heading "Changes Foreseen" under International No. 1 and No. 2 respectively.

TRAFFIC VOLUMES FOR 1968 (BOTH WAYS)

	<u>COTC</u>	<u>WUT</u>	<u>CCC</u>	<u>TOTALS</u>
(A) Telephone (Pd.minutes)	7,700,000	-	-	7,700,000
(B) Telegraph (Messages)	2,600,000	477,644	490,000	3,567,644
(B) Telex (Minutes)	2,940,000		(C)104,000	3,044,000
(A) TWX (Messages)	41,061	-	-	41,061
(A&B) Private Lines	Various	-	-	Various
(A&B) Program (Minutes)	34,800	-	-	34,800
(A&B) Television (Number)	46	-	-	46
(C) Phototelegrams	Minor	-	-	Minor
(B) Datel 600 (Minutes)	4,500	-	-	4,500

(A) - Exchanged with TCTS

(B) - Exchanged with CN/CP

(C) - Exchanged with COTC.

REVENUES 1968

	<u>COTC (1)</u>	<u>WUI</u>	<u>CCC</u>	<u>TOTALS</u>
Telephone	9,185,000	-	-	9,185,000
Telegraph	3,861,000	1,265,567 (2)	1,220,000	6,346,567
Telex	4,989,000	-	52,000	5,041,000
TWX	53,000	-	-	53,000
Private Lines	9,177,000	-	-	9,177,000
Program	123,000	-	-	123,000
Television	20,000	-	-	20,000
Phototelegrams	6,000	-	-	6,000
Datel 600	17,000	-	-	17,000
	<hr/>	<hr/>	<hr/>	<hr/>
	\$ 27,431,000	\$ 1,265,567	\$ 1,272,000	\$ 29,968,567
	<hr/>	<hr/>	<hr/>	<hr/>

(1) Includes COTC share for handling transit traffic, international connecting carrier share, and foreign carrier terminal share.

(1) & (2) Excludes Canadian domestic carrier share.

TRAFFIC VOLUMES FOR 1968 (BOTH WAYS)

	<u>TCTS</u>	<u>CN/CP</u>	<u>TOTALS</u>
Telephone (Messages) *	47,471,033	-	47,471,033
Telegraph (Messages)	-	1,998,151	1,998,151
Telex	-	See revenue	See revenue
TWX (Messages)	958,837	-	958,837
Private Lines (Circuits)	3,540	See revenue	See revenue
Program (hours)	1,133	-	-
Television (hours)	4,986	-	-
Phototelegrams	-	-	-
Datel 600	-	-	-
Broadband Exch. Serv.	-	See revenue	-

* Includes Dataphone; and also Canada-Mexico, Canada-Alaska and Canada to points reached via U.S. gateways.

REVENUES - 1968

	<u>TCTS</u>	<u>CN/CP</u>	<u>TOTALS</u>
Telephone	61,690,816	-	61,690,816
Telegraph	-	2,591,946	2,591,946
Telex	-	1,988,031	1,988,031
TWX	875,933	-	875,933
Private Lines	13,417,530	23,700,000 *	37,117,530
Program	41,885	-	41,885
Television	121,092	-	121,092
Phototelegrams	-	-	-
Datel 600	-	-	-
Broadband Exch. Serv.	-	20,143	20,143
	<hr/>		
	\$ 76,147,256	\$ 28,300,120 *	\$ 104,447,376
	<hr/>		

* Includes intra-Canada and Canada-U.S. and not able to segregate.

GROWTH RATES (ESTIMATED)

	<u>International No. 1</u>	<u>International No. 2</u>
Telephone	25%	9%
Telegraph	5%	- 6.7%
Telex	35%	20%
TWX	-	9%
Private Line	10%	7%
Sound Program	-	9%
Television	5%	5%
Phototelegrams	-	-
Datel 600	25%	-
Broadband Exchange Service	-	20%

The above growth rates are based upon estimates in percent per annum for the ensuing five years.

The estimates are founded on projections of several previous years records of traffic performance. In the case of International No. 1 the figures are those agreed among international carriers of several countries as well as among the operating and planning groups concerned in the Commonwealth system.

Growth rates shown under International No. 2 are also those agreed by the United States and Canadian carriers involved, e.g. TCTS - AT & T, and CN/CP - Western Union to be the best estimates based on projections of previous years performance, taking into account a wide variety of contributory factors including incentives such as reductions in telephone calling rates during off-peak hours.

Specialized economic studies carried out by the International Telegraph and Telephone Committee, (CCITT) among many widely separated countries tend to show that international trade, travel and the cost of calls are the main factors determining the volume and distribution of international service and consequently the rates of growth.

NOTE: See also explanatory information under the headings "Size and Nature of Market" and "Changes Foreseen" under International No. 1 and No. 2 respectively.

SECTION IV

INVESTMENTS

Canadian Overseas Telecommunication Corporation (COTC)

Net capital investment as at April 1, 1969 was \$70,293,684.

The following is a breakdown of Capital Budgets for the years indicated:

	<u>1970/71</u>	<u>1971/72</u>	<u>1972/73</u>	<u>1973/74</u>	<u>1974/75</u>	<u>1975/76</u>
Satellite Systems	4.65	7.4	2.	1.	.15	.35
Telephone Cable Systems	5.4	.5	1.5	1.2	9.	8.
Radio Systems	.05	.1	.1	.1	.1	.1
Building Additions	-	-	.7	1.3	-	-
Switching Centres	1.5	1.3	1.1	1.	3.	1.9
Other Terminal Equipment	3.4	3.6	4.4	5.3	6.4	7.9
	15.	12.9	9.8	9.9	18.65	18.25

Depending upon technological developments it is estimated that COTC investments will run at about \$15 million per year for the next three years after 1975/76.

Commercial Cable Company (CCC)

Since CCC abandoned its old Trans-Atlantic cable system some 8 years ago, it now leases required facilities from COTC. The net result is that CCC's capital investment in Canada has been reduced to some \$10,000 for equipment, but its rental costs have increased sharply. No substantial change is contemplated at this time.

Western Union International Inc. (WUI)

Cost of property and equipment (depreciated) in 1968 was \$205,092. Reduction in property and equipment is due to abandoning portions of WUI North Atlantic system in favour of leasing circuits from COTC.

Eastern Telephone and Telegraph Company (ET & T)

Cost of property and equipment (depreciated) as of 1968 was \$4,779,031 (per DBS). ET & T, a Canadian subsidiary of the American Telephone and Telegraph Company, (AT & T) does not operate in Canada but owns and maintains radio relay and cable facilities in Newfoundland, Nova Scotia, and New Brunswick to provide links between the U.S. and Trans-Atlantic cables landed at Clarenville, Newfoundland.

Trans-Canada Telephone System (TCTS)

Because various items of telephone plant are used for all classes of service offered, it is not possible to state precisely the investment in the plant directly related to each service. The shared use of common plant among various services or activities is a characteristic of many industries other than the telecommunications industry. Examples are the oil and transportation industries. They too have been faced with a requirement to allocate costs among various products and services.

It is possible to develop a set of rules which, when applied, will result in the allocation of investment or expenses. It must be appreciated that such an allocation is based on arbitrary premises and a plan which is designed to achieve a particular objective. Separations plans can be useful tools for specific purposes. It is essential, however, that information derived from such plans not be used for any other purposes, because the result of so doing would have no validity and could lead to erroneous conclusions.

The members of the TCTS utilize a separations system designed for the purpose of settling jointly earned revenues. That system allocates, for Division of Revenue purposes, expenses and gross investment to some of the various classes of service provided.

Investments in Canada in telephone plant of the companies of the Telephone Association of Canada (TAC) at the end of 1969 was \$5.9 billion. Total plant additions planned by members of TCTS during the next 10 years for all services are developed, but there are no figures available to indicate what portion of these total expenditures will be directly related to international services. This again is because various items of plant are used in common by many services.

Canadian National - Canadian Pacific Telecommunications (CN/CP)

The common nature of switching, line and terminal facilities

provides for the handling of both domestic and international services. It is therefore impossible to segregate capital investments associated with international service only.

Cost of property and equipment (depreciated) in 1968 for domestic carriers amounted to about \$283 million (per DBS).

NOTE: See also explanatory information under the headings "Growth Rates" and "Size and Nature of Market".

SECTION V

RATES AND TARIFFS

Determination

Rates and tariffs take into account the requirements of the Administrations and/or Private Operating Companies at both terminals, and in the countries through which the traffic may pass in transit.

Economic viability is the basic consideration in determining the level of COTC collection rates. In general, these are aligned with rates set by U.S. international carriers for similar services. On particular routes, rates are generally similar for both directions, subject to currency exchange variations. However, in the case of the telegraph service, the foreign collection charge based on Gold Francs is generally considerably higher than at the North American end.

In 1945 when overseas service was being reopened after the war, the AT & T and the British Post Office agreed to adopt a uniform schedule of rates for worldwide application. The "worldwide" plan was accepted by the Canadian Marconi Company (then operating the overseas wireless facilities) and by the Canadian landline systems, and is in effect in most parts of the world today.

The schedule of rates is based on the airline mileage between the centers of 10° squares, measured mathematically by the Great Circle measurement plan (using geographical coordinates). In the application of this plan, it was recognized that adjustments in mileage might be required to recognize the center of population rather than the geographical center of any country.

In addition, some large countries such as Canada may be divided into zones for the establishment of rates to certain other countries where significant mileage differences are thus created. Also, in some cases, community of interest between two adjacent countries might warrant a similar rate treatment for each even though they were located in different rate zones. Similarly, community of interests have led to special rate treatment between specific countries.

Co-ordination with Domestic and Foreign International Carriers

Co-ordination of telephone service rates with the domestic carriers and the foreign international carriers is handled by the COTC on traffic via the Montreal and Vancouver gateways.

The telephone companies' (B.C. Telephone and Bell Canada) agreements with COTC require "That tolls charged to the public for messages transmitted hereunder shall be in accordance with established rates and regulations such as the parties hereto shall adopt, by mutual agreement, from time to time".

Rates for traffic via U.S. overseas terminal offices (New York City, White Plains, N.Y., Miami and Jacksonville, Fla., and Oakland, Calif.) are co-ordinated by AT & T and TCTS. COTC do not participate in the establishment of rates and do not share in the revenue deriving from traffic routed via these U.S. overseas terminal offices.

Co-ordination of COTC rates with other Commonwealth and foreign international carriers is generally on a bilateral discussion basis.

COTC telegraph rates are co-ordinated with other Canadian international carriers (CCC and WUI) through bilateral discussions.

Rates with the domestic carriers are co-ordinated by COTC through negotiations and for most services these are covered by agreements executed between COTC and the domestic carriers.

CCC have no co-ordination with foreign international carriers in establishing telegraph rates from Canada, except that their notified terminal and transit requirements are taken into consideration when setting the rates.

Extent to which Canadian International Rates are Competitive

Customer rates and tariffs are, in general, arranged to be competitive with similar rates and tariffs set by other foreign international carriers for these services, provided they can be economically viable.

The fact that the "worldwide" plan is followed ensures that Canadian users enjoy rate treatment comparable with other countries. The differences that do exist are lower rates and reflect special communities of interest or the ability to participate in savings associated with technical development.

Direct comparison of rates is difficult because of differences in purchasing power within the participating countries and the relative values of the various currencies in the foreign exchange market.

Changes in Customer Rates and Tariffs Foreseen for the Next 5 Years

On COTC Canada/U.K. and European streams, rate reductions for telex, leased circuits and certain classes of telephone service were introduced during the first half of 1970. These reductions are in the range of 16 to 25 percent and are a result of realized and anticipated operating economies. Reduced rates for certain streams of telegraph traffic are now under active consideration. Although no other reductions are planned at this time, the review of rates is a continuing exercise and adjustments are effected as conditions warrant.

A continuation of the downward trend is envisaged, due to technological advances, which has been experienced in the past barring unforeseen or extraordinary financial burdens on the business generally or on any service specifically.

Since Canadian international telegraph rates and tariffs are, to a degree, related to the requirements of other carriers (e.g. Canadian domestic carriers) it is somewhat difficult to forecast any significant changes in telegraph rates in the next 5 years. However, none is foreseen at this time.

RATES AND TARIFFS

Determination - Telephone Rates

The basic approach to the Canada - U.S. schedule of telephone rates is similar to the domestic plan in that each exchange is designated as a rate center. The message toll rates are based on the airline distance between rate centers.

For the purpose of determining such airline or rate distances, a vertical (V) and horizontal (H) co-ordinate system is used. The V-H system consists of a series of co-ordinates which represent a theoretical grid of vertical and horizontal lines covering Canada and the United States. The spacing between adjacent lines is about 1670 feet and represents a distance of one co-ordinate unit. A V co-ordinate and an H co-ordinate are computed for each rate center from its latitude and longitude location, by use of appropriate map projection equations. The rate distance between any two rate centers is the airline distance between the points designated by the V-H co-ordinates of the respective rate centers.

The Canada - U.S. schedule reflects the relative rate levels of the two national schedules (AT & T Long Lines and TCTS) in combination. As such, the general level of the Canada - U.S. rates falls between that of the Long Lines schedule and that of the TCTS schedule. The U.S. interstate rates are generally lower than TCTS due to factors such as higher telephone development, larger population base, the nature of the geographic distribution of population and the resultant economies of scale.

The Hawaiian and Alaska interchanges are rated in a manner similar to international services (zone to zone rather than rate center to rate center).

Exception

An exception occurs with traffic interchanged with Mexico. The rates for Mexico follow the "other line charge" principle. The total rate is the applicable portion of the Canada - U.S. schedule to or from the Canadian point and the U.S. - Mexico border crossing plus the intra Mexico rate between the Mexican point and the border crossing.

Determination - Telegraph and Telex

Tariff rates are set through negotiations and agreement between CN/CP and Western Union Telegraph Company in the case of services between Canada and the United States, excluding Alaska.

The guiding principle in setting rates is the economic need of the carriers involved and market elasticity.

Public message telegraph and Telex rates require the prior approval of the Canadian Transport Commission (CTC) before they are implemented. Co-incident approval by the United States Government (FCC) of Western Union Telegraph Company counterpart rates is required. CTC recently approved a change in the tariff structure of public messages exchanged between CN/CP and the Western Union Telegraph Company. The change called for a simplification of the tariff and is based on a two-zone system.

Rates to Alaska consist of the intra-Canada CN/CP rates to the interchange point plus the intra-Alaska rates set up by the Alaska Communications System, i.e. end-on-end principle.

Rates to St. Pierre et Miquelon are a combination of the intra-Canada CN/CP rates to the COTC interchange point (Montreal) plus the rates set by COTC to St. Pierre et Miquelon, i.e. end-on-end principle.

A special Telex rate applies between Canada and Mexico and differs from rates between Canada and U.S. or within Canada.

Co-ordination - Telephone Rates

Rates are co-ordinated through direct negotiation by the parties participating in the provision of service.

(a) Canada-U.S. and Canada-Mexico

- AT&T and TCTS
- Mexican traffic is associated with these negotiations in the sense that the schedule forms part of the two line rate.

(b) Canada - Hawaii

- Hawaiian Telephone Company and TCTS.

(c) Canada - Alaska

- Alaska Communications System, CNT and TCTS.

Co-ordination - Telegraph and Telex

See under "Determination" above.

Extent Rates are Competitive - Telephone

Rates are the same for telephone traffic in either direction (i.e. a call of the same duration, the same class of service and the same time of day between Ottawa and New York City has the same rate as a call in the reverse direction). As the U.S. interstate rates are considered to be as low as any in the world (on a purchasing-power basis) and as TCTS rates rank among the lowest, it must follow that Canada-U.S. rates are as low or lower than rates between other pairs of adjacent countries.

Extent Rates are Competitive - Telegraph and Telex

Rates for these services are considered to be as low as any in the world and are as low or lower between other pairs of adjacent countries. Rates are the same in either direction for the same class of service and time of day.

Changes in Customer Rates and Tariffs Foreseen For the Next 5 Years

Telephone

A continuation of the downward trend due to technological advances, which has been experienced in the past barring unforeseen or extraordinary financial burdens on the business generally or on any service specifically.

The above is particularly applicable to Canada-U.S. rates where other changes such as lower rates for customer dialed calls than for operator handled station-to-station calls, and, less than 3 minute minimum charges are being considered.

Telegraph and Telex

No comment.

SECTION VI

SETTLEMENTS

All COTC Services

Financial settlement by COTC for the major portion of Canada/Commonwealth traffic is covered by an arrangement whereby the originating country retains its net revenue which is calculated by deducting agreed terminal charges from its gross receipts. The only settlement with the distant National Body is for their portion of the terminal charges.

Canada/Foreign traffic with countries to whom direct COTC service is available and for Canada/Commonwealth traffic carried via direct COTC satellite links, sharing is on the basis of a 50/50 division of that portion of the revenue relating to the overseas circuit. In addition, the destination Administration receives their required terminal portion for such traffic.

When Canada's originated traffic handled by COTC to a foreign country, transits one or more intermediate points, each foreign Administration concerned in the handling of the message receives payment for the services rendered by it. The destination Administration also receives its required terminal charges. In such instances settlement for the portion of the route beyond the first transit point is made through the first transit Administration.

In all of the above cases, COTC accounts are rendered monthly and settlements effected quarterly.

Public Telephone Service

COTC - TCTS

Monthly settlements are made between TCTS and COTC for international connections to and from Canada routed over facilities of the COTC.

Revenues accrue to the TCTS on the basis of rates per minute which vary with the class of call and the COTC gateway office concerned, i.e. Montreal or Vancouver.

A schedule of fixed payments per minute for message toll telephone business has been established to simplify settlement procedures. The settlement agreement provides for payment of an operating charge plus an amount which varies with the point of origin and termination of traffic. These variables have been consolidated into a schedule of payments per message to simplify the monthly revenue settlement.

TCTS also receives payment for the international transiting functions which it performs on the basis of fixed amounts per minute.

For service billed in Canada, TCTS is responsible for collecting the established tariff charges from the public. The System deducts an agreed terminal amount for the facilities they provide. The balance is credited to COTC for settlement with the foreign Administration.

For service billed by foreign Administrations, the agreed terminal amount accruing to the TCTS is collected from the foreign Administration by COTC and credited to TCTS.

The net balance of revenue applicable to inward and outward business is settled with COTC each month by the British Columbia Telephone Company and Bell Canada in their capacity as agents for the TCTS.

Agreements exist between COTC and each of these telephone service entities.

The introduction of automatic alternate routing will probably necessitate that settlement between COTC and foreign carriers be based on sampling surveys rather than an attempt to record the routing of each call. Settlement would be made according to the distribution observed during the sampling period.

Settlement would still be made with the first transit center for all traffic other than direct groups. The sampling process may be combined with measurements of circuit usage on certain circuit groups such as final routes which are the alternate choice for calls to many destinations.

However, the main difference anticipated in the future will be the tendency to determine settlement for line facilities on the basis of use of those facilities rather than the summation and recording of each call. Sampling may well be the method used to determine usage. This method is much simpler and more economical than the cumbersome methods and complicated equipment involved with other procedures.

Measurement of transit calls can involve either "holding time" or "conversation time".

Settlements between COTC and TCTS may continue under a schedule of fixed payments per minute.

TCTS - AT & T

Settlements with respect to traffic between Canada and certain countries but excepting Mexico, reached through AT & T gateways, are made between the TCTS and AT & T on the basis of rates per minute which vary with the class of call, the originating or terminating point in Canada and the U.S. gateway office concerned.

Payment representing the difference between the amount billed by Canada and the amount due to Canada for inward and outward business is made each month between the AT & T and the TCTS (50% in the funds of each country, or the equivalent thereof).

Settlements relative to traffic between Canada and Mexico are described under International No. 2.

Public Message Telegraph Service

COTC - CN/CP

Settlements between COTC and CN/CP are based on a payment by COTC of a terminal share to CN/CP of $6\frac{1}{2}$ cents per full-rate word handled on messages inbound to or outbound from Canada. Settlement for other classes of messages is proportionate.

CN/CP are responsible for collecting the established tariff from the public for traffic billed by them in Canada, from which they deduct the above-mentioned terminal share for the facilities they provide. The balance is paid to COTC who in turn settle with the foreign Administration.

For traffic billed by the foreign Administration, the above terminal share is collected from the foreign Administration by COTC and remitted to CN/CP.

Settlements are on a monthly basis, and are covered by an Agreement providing for the exchange of international telegraph messages between points within Canada and points outside Canada, excluding continental U.S. This agreement currently is being reviewed with a view of superseding it by a new one.

Additionally, the following subsidiaries of U.S. companies providing international telegraph service in competition with COTC arrange settlements as follows:

Commercial Cable Co. (CCC)

For the exchange of telegraph traffic with foreign administrations, CCC, Montreal settles its accounts with CCC, London, England, who in turn settles with the foreign administration.

Settlement rates between CCC, Montreal, and CN/CP are the same as for the COTC-CN/CP settlements.

Conditions are covered by an agreement dated January 8th, 1970, providing for the exchange of international telegraph messages between points within Canada and points outside Canada excluding continental U.S. and Mexico.

Western Union International Inc. (WUI)

For the exchange of telegraph traffic with various foreign administrations, WUI, Montreal settles its accounts generally on the basis of equal division of the tolls after the deduction of terminal and transit charges.

Accounts are prepared monthly and settled quarterly with foreign administrations, and monthly with CN/CP, and COTC.

Settlement rates between WUI and CN/CP are the same as for the COTC-CN/CP settlements.

Conditions are covered by a 1969 agreement providing for the exchange of international telegraph messages between points within Canada and points outside Canada, excluding continental U.S. and Mexico.

Radio Corporation of America (RCA) - COTC

COTC have a telegraph traffic interchange arrangement with RCA, New York which is authorized annually by the Minister of Communications, in order to enable COTC to reach countries (Appendix A) not accessible by its own facilities or through those of the Commonwealth System.

There is no evidence of a formal agreement covering or setting out conditions and settlements.

Telex

COTC - CN/CP

Settlements between COTC and CN/CP are based on a payment by COTC of a terminal share of 30 cents per minute.

Conditions are similar to those under Telegraph Service.

Settlements are on a monthly basis and are covered by an agreement dated 26 October 1966, providing for the exchange of all manner of trans-oceanic and intercontinental telecommunications service employing any frequency bandwidth now in use or to be

developed in future, other than international telegrams and telephone calls.

Additionally, COTC have Telex traffic interchange arrangements with ITT, New York, RCA, New York and WUI, New York in order to reach countries (Appendix A) not accessible by its own facilities or through those of the Commonwealth.

COTC - ITT

Settlements between COTC and ITT, New York are arranged through the Canadian subsidiary of ITT, namely CCC, Montreal.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

Accounts are settled quarterly in accordance with statements prepared by COTC.

The COTC-ITT (via Commercial Cable Co.) arrangement is authorized annually by the Minister of Communications.

COTC - RCA

Settlements between COTC and RCA, New York are settled quarterly in accordance with statements prepared by COTC.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

The COTC-RCA arrangement is authorized annually by the Minister of Communications.

COTC - WUI

Settlements between COTC and WUI are arranged through the Canadian subsidiary of WUI in Montreal.

The division of tolls on each Telex call is patterned according to the collection rate (i.e. rate charged to the public) based on COTC receiving a terminal share out of the applicable 3-minute unit charge.

Accounts are settled quarterly in accordance with statements prepared by COTC.

TWX

COTC - TCTS

Monthly settlements are made between the TCTS and COTC for international TWX connections routed over facilities of the COTC. This includes Canada - Mexico TWX. Revenues accrue to the TCTS on the basis of a flat rate per minute. The net balance of revenue applicable to inward and outward business, is paid to COTC each month by Bell Canada in its capacity as agent for the TCTS.

Station charges are retained by the providing party and are not subject to division.

Private Line Service, Including TV and Program Service

Settlement between COTC and various domestic carriers is based on the latter receiving their leased circuit tariff for facilities provided up to the COTC gateway at Montreal or Vancouver.

In the case of Trans-Atlantic telecasts, the domestic carrier receives his required Canadian tariff to the COTC earth station at Mill Village, N.S. For Pacific telecasts, both Canadian and U.S. domestic carriers receive their respective share of the domestic tariff for facilities provided by each of them up to the earth station at Jamesburg, California, through which COTC has access for such Pacific telecasts.

An agreement exists between COTC and CN/CP dated October 26, 1966, providing for the exchange of all manner of trans-oceanic and intercontinental telecommunications service employing any frequency bandwidth now in use or to be developed in the future, other than for international telegrams and telephone calls.

SETTLEMENTS

Public Telephone Service

TCTS - AT & T

Monthly settlements are made between the TCTS and the AT & T Co. for connections between Canada and the United States (except Alaska and Hawaii but including Mexico) on the basis of Canadian billed revenues, using ratios established from periodic joint studies of revenues, expenses and book costs assigned to this service.

These studies are used to determine the percentage of the total revenue which will accrue to each party. This percentage is applied to the total revenues each month in the interval between cost separation studies to achieve the division of revenues.

Alaska and Hawaii settlements are made in the same manner as defined under International No. 1.

TCTS - Other Canadian Domestic Carriers

These services are usually settled as a part of the settlement for the total interchange of services, domestic and international, between the individual members of TCTS and the other carriers. Where specific settlement arrangements do exist between TCTS and other domestic carriers for these services, they are commission and prorate type division of revenues settlements.

Public Message Telegraph Service

CPT - Western Union Telegraph Co.

Settlements between CPT and the Western Union Telegraph Company in the U.S. are covered in an agreement dated October 1st, 1933, originally executed between CPT and the Postal Telegraph Company; the latter having been purchased by Western Union in 1943.

This agreement extended by the Memo of Understanding of 1943 - see notes ahead, provides that commercial telegraph and ship wireless business between CPT facilities in Canada and those of Western Union in continental United States shall be interchanged exclusively between the two parties, including all radio and cable messages (described in a schedule to the agreement) which either party is able to obtain or control, (and/or are) directed to the facilities of the other party. The Schedule includes "Mexican offices" in the list of interchange items.

The division of landline tolls is currently $49\frac{3}{4}$ - $51\frac{1}{4}$ between the two parties and can be revised by mutual consent.

CNT - Western Union Telegraph Co.

Settlements between CNT and the Western Union Telegraph Company in the U.S. are covered by an agreement dated January 1st, 1915 originally executed between a first party of Canadian Northern Telegraph Company and the Great North Western Telegraph Company and Western Union as the second party.

This agreement (expiring in 1978) provides for the exchange, exclusively each with the other of all communications business destined to each other's territory, and is said to contain provisions about Mexican traffic similar to those in the CPT/Western Union Telegraph Co. agreement.

The division of landline tolls is currently 46% CNT and 54% Western Union.

CN/CP - Western Union Telegraph Co.
Memo of Understanding

Both of the foregoing agreements have been modified by a Memorandum of Understanding between CN/CP and Western Union Telegraph Co. dated July 6th, 1943. This memorandum has been renewed at intervals; the latest being on August 1st, 1966 extending the present interconnection arrangement to December 31st, 1971.

CNT - Alaska Communications System (ACS)

Settlements between CNT and the ACS are based on CNT retaining all of the Canadian portion of the toll; remitting the remainder to ACS after deducting and remitting the "other line" portions to other Canadian companies when they are involved. CPT do not interchange with ACS.

Interchange and settlement arrangements covered by exchange of letters.

Telex

Settlements between CN/CP with the Western Union Telegraph Company in the U.S. are based on Western Union retaining 100 percent of the amount collected on calls from U.S. to Canada: CN/CP doing the same on calls from Canada to the United States.

Station charges are retained by the providing party and are not subject to division. A fixed rate exists from any point in Canada to any point in Mexico.

Settlements between the Western Union Telegraph Company, and CN/CP, and the Mexican Administration are based on a three-way split of the tolls.

Interchange and settlement arrangements are covered by an exchange of letters.

TWX

TCTS - AT & T

Monthly settlements are made between the TCTS and the AT & T for TWX connections between Canada and the coterminous U.S. excluding Mexico. Revenues are divided on a commission and pro-rate plan of settlement. Amounts due are netted against those due for telephone service and are included in the one payment described above. Station charges are retained by the providing party and are not subject to division.

Private Line Service (including TV and Program Service)

Private line services to or via United States points are billed in Canada to or from the Canadian border crossing point. This revenue is distributed by TCTS to the telephone companies involved.

Similar settlement is followed by CN/CP in their provision of private line service. In the case of Broadband Exchange Service connections between CN/CP and the Western Union Telegraph Company in the U.S., settlements are on the basis of a pro-rate of the line haul.

Arrangements are covered by an exchange of letters.

Particular Items Drawn to Attention
By Telecommission Project 3E Team

Telephone

1. As and when Canadian facilities become economically available, present routes via AT & T to points outside U.S. should be replaced by routes with maximum Canadian content.
2. An objective should be to establish International Direct Distance Dialling (I.D.D.D.) outward from Canada via COTC to all countries able to accommodate such service.
3. Regular co-ordination should be established between the International and Domestic Carriers to ensure that the high standards and procedure apply in equal measure to the external and internal telecommunication services.
4. Canada's International Carrier (COTC) as a participating member of the Commonwealth bodies and International Agencies established to promote the development of technical facilities and their efficient operation should continue to co-operate with its International counterparts ensuring conformity with International requirements and ITU Regulations and Recommendations to further improve the existing high quality performance International service.
5. As approved by the Canadian Government, the following common carriers: - the Canadian Overseas Telecommunication Corporation, the Telephone Association of Canada (embracing TCTS and other TAC members) and the Railway Association of Canada (embracing CNT/CPT) participate in the work of many Study Groups of the I.T.U. Consultative Committees (CCITT and CCIR) as recognized private operating agencies.
6. The present overseas rate Canada - St. Pierre/Miquelon should be replaced by a rate comparable to domestic rates.
7. Existing rates Canada - Alaska and Canada - Hawaii, now under review, should be aligned with the Canada - U.S. rate structure.
8. Present Canada - Mexico end-on-end rates should be reviewed with the object of establishing a "through" rate.

Telex

9. Interworking between Canadian Telex and U.S. TWX networks is being developed.

10. . Canada - Mexico telex service now handled by CNT/CPT/
Western Union via U.S. should be examined in collaboration with
COTC from the standpoint of rates and routing.
11. Fully automatic Telex service to all countries should
be provided to those countries that can accommodate this operation.
12. Telex calls dialable from Canada to countries other than
the U.S. and Mexico follow an all-Canadian route (i.e. not via the
U.S.) where this is economically feasible. This procedure is covered
by agreements between COTC and CNT/CPT.
13. As and when Canadian facilities become economically
available, present telex routes via the U.S. should be replaced by
routes with maximum Canadian content.

Telegraph

14. Ideally, service to and from all foreign countries should
be provided through COTC arrangements to achieve maximum Canadian
content.
15. The make-up and tariff listing of rates for Canada -
Alaska traffic and Canada - St. Pierre/Miquelon traffic should be
examined.

General Observations

By Trans-Canada Telephone System

Factors Affecting Canada-International Telephone Service

In order to make overseas service more similar to that encountered domestically and to the U.S. by Canadian users, the following factors must be overcome. It must be recognized that many if not all, of these items are beyond the direct control of any Canadian carrier.

There must be sufficient circuits to provide the objective grade of service all the way to the terminating overseas customer.

Ringdown circuits and manual switching must be replaced by automatic operation.

H-F radio circuits must be eliminated.

Operating methods must be improved in some countries to reduce non-productive circuit holding time.

There must be agreement on operating procedures with foreign administrations.

Standard policies with respect to collect, credit card and station calling are required.

Standard numbering plans and routing methods must be utilized.

Tone differences must be resolved so customers and operators will be able to interpret line busy, no circuit, etc.

24-hour service should be provided in all areas.

Factors Affecting Canada - U.S. Telephone Service

Main factors which have facilitated the provision of the existing high level of service to the U.S. are the following. It must be realized that the nature of some of these factors is such that they cannot be applied in other types of international service.

Fully integrated Canada - U.S. toll network
Provision of circuits to meet the traffic flow as
determined by studies
Automatic alternative routing of calls
A common numbering plan
A common operator language
Compatible standards of service
Common operating practices
Changes are made in an orderly manner with agreement
between all concerned and arrangements are made to
cope with differences where they must exist so the
service does not suffer.

The desire of the Canadian telephone industry is to establish the long range objective of making overseas service as similar as possible to North American levels of service which have been reached through the high degree of planning and co-ordination of network administration, provisioning and operating procedures between members of TCTS and U.S. organizations.

Before this objective can be realized, a similar degree of co-ordination, planning and control in the overseas field is required.

The far greater difficulties in dealing with many and varied foreign administrations, than in dealing with the U.S. alone are recognized as significant impediments to the development of similar degrees of co-ordination, planning and control as desired.

Observations by Electronic Industries Association
(Canada) Regarding the Nature of the Market

The EIAC representative pointed out the increasing interest in off-shore markets for data sets, particularly those which make optimum use of the voice-band, by airlines (for passenger and freight data), and in connection with the tie-in between hotels and travel agencies, international banks and brokerage houses, and multi-national corporations. Increased business interest in existing services, and new services such as picturephone, is likely to be stimulated more by lower rates than by new devices.

Since long distance service costs tend to go down due to the decreasing cost per circuit mile as the quantity of circuits increase, a reduction in rates and a stimulation in traffic due to this could therefore be looked upon as a substantial incentive to increased use.

Appendix "A"

TELEX ROUTED VIA NEW YORK

(Normal routes only)

RCA	ITT	WUI
Dominican Republic (326)	Dominican Republic (346)	Colombia Republic
Guam	Ecuador (353)	Hawaii (632)
Guatemala	Haiti (349)	Panama (638)
Haiti (329)	Hawaii (743)	
Hawaii (723)	Nicaragua (2-3 digits)	
Mexico (Canadian	Puerto Rico (345)	
TWX only)	Salvadore, el	
Nicaragua (2-3 digits)	Virgin Islands (347)	
Ryukyu Islands		
Samoa (American)		

TELEGRAMS ROUTED VIA NEW YORK

(Normal route only)

RCA

Antarctica - Little America, McMurdo Sound
 Caroline Island
 Colombia Republic
 Guam
 Johnston Island
 Mariana Island - Saipan
 Marshall Island
 Midway Island
 Ogasawara Island
 Venezuela
 Wake Island

ITT and WUI

Nil

Appendix "B"

DIRECT NORMAL TELEX ROUTINGS

Argentina	Germany - West	Portugal
Australia	Hong-Kong	Sweden
Austria	Iceland	Switzerland
Barbados	Italy	Trinidad
Belgium	Jamaica	United Kingdom
Bermuda	Japan	U.S.S.R.
Brazil	Netherlands	Vatican City
Denmark	New Zealand	
Finland	Norway	
France	Peru	

Appendix "C"

CANADIAN OVERSEAS TELECOMMUNICATION
CORPORATIONLIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
ATLANTIC REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	ALGERIA	X	1972
2.	ARGENTINA	X	15 September 1969
3.	BRAZIL	X	22 February 1969
4.	CAMEROON	X	1971 (July)
5.	CANADA		
	Mill Villiage 1	X	24 October 1966
	Mill Villiage 2	X	29 January 1969
6.	CHILE	X	22 July 1968
7.	COLOMBIA	X	1970 (March)
8.	ECUADOR	X	1971
9.	ETHIOPIA	X	1971
10.	FRANCE		
	Pleumeur Bodou 1	X	28 June 1965
	Pleumeur Bodou 2	X	3 November 1969
	Martinique	X	mid-1971
11.	GERMANY		
	Raisting 1	X	28 June 1965
12.	GREECE	X	1970 (April)
13.	IRAN	X	4 October 1969
14.	ISRAEL	X	1972
15.	ITALY		
	Fucino 1	Non-standard	28 June 1965
	Fucino 2	X	17 August 1967
16.	IVORY COAST	X	1971
17.	JAMAICA	X	1971 (February)
18.	JORDAN	X	1970 (October)

COUNTRY	STANDARD STATION	DATE OF OPERATION
19. LEBANON	X	7 September 1969
20. MEXICO	X	13 January 1969
21. MOROCCO	X	1969 (November)
22. NETHERLANDS	X	1972 (4th Quarter)
23. NIGERIA 1	X	1970 (4th Quarter)
24. PANAMA	X	7 September 1968
25. PERU	X	3 July 1969
26. SAUDI ARABIA	X	1971
27. SCANDINAVIA Tanum, Sweden	X	1971 (4th Quarter)
28. SENEGAL	X	1971
29. SPAIN Canary Islands 1 Canary Islands 2 Buitrago 1	Non-standard X X	7 April 1967 1971 11 January 1968
30. SUDAN	X	1972
31. SWITZERLAND	X	1972
32. TRINIDAD AND TOBAGO	X	1971 (April)
33. TURKEY	X	1972
34. UNITED ARAB REPUBLIC	X	1972
35. UNITED KINGDOM Ascension Is. Goonhilly 2	Non-standard X	7 April 1967 26 November 1968
36. UNITED STATES Andover Andover Etam, W. Va. Cayey, P.R.	Non-standard X X X	7 April 1967 28 June 1965 6 January 1969 25 January 1969
37. VENEZUELA	X	1970 (4th Quarter)

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
PACIFIC REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	AUSTRALIA		
	Carnarvon 1	Non-standard	4 February 1967
	Carnarvon 2	X	1 October 1969
	Moree	X	23 May 1968
2.	CHINA (Republic of)	X	1969 (4th Quarter)
3.	JAPAN		
	Ibaraki 2	X	26 March 1968
4.	KOREA (Republic of)	X	1970 (February)
5.	NEW ZEALAND	X	1970 (4th Quarter)
6.	PHILIPPINES		
	Tanay 1	X	28 April 1968
7.	THAILAND		
	Si Racha 1	X	8 April 1968
8.	UNITED KINGDOM		
	Hong Kong 1	X	6 September 1969
9.	UNITED STATES		
	Alaska	X	1970 (July)
	Brewster	X	8 December 1966
	Guam (Pulantat)	X	1969 (November)
	Jamesburg, Calif.	X	1 December 1968
	Paumalu	Non-standard	3 December 1966
	Paumalu 1	X	8 December 1966
	Paumalu 2	X	1 December 1968
10.	VIET NAM (Republic of)	X	1970

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
INDIAN OCEAN REGION SATELLITE

	COUNTRY	STANDARD STATION	DATE OF OPERATION
1.	AUSTRALIA Ceduna	X	1969 (November)
2.	BAHRAIN	X	14 July 1969
3.	EAST AFRICA (KENYA)	X	1970 (May)
4.	GERMANY Raisting 2	X	10 October 1969
5.	INDIA	X	1970 (January)
6.	INDONESIA Djatiluhur 1	X	19 September 1969
7.	ITALY Fucino 3	X	1970 (2nd Quarter)
8.	JAPAN Yamaguchi	X	1 July 1969
9.	KUWAIT	X	20 October 1969
10.	LEBANON	X	1970 (3rd Quarter)
11.	MALAYSIA	X	1970 (March)
12.	NIGERIA 2	X	1971
13.	PAKISTAN East	X	1971
	West	X	1971
14.	PHILIPPINES Tanay 2	X	1970
15.	SINGAPORE	X	1970 (December)
16.	SPAIN Buitrago 2	X	1970 (April)

LIST OF EXISTING AND PROPOSED EARTH STATIONS THROUGH 1972
INDIAN OCEAN REGION SATELLITE

COUNTRY	STANDARD STATION	DATE OF OPERATION
17. THAILAND		
Si Racha 2	X	1969 (November)
18. UNITED KINGDOM		
Goonhilly 1	X	1 July 1969
Hong Kong 2	X	1971 (February)
19. ZAMBIA	X	1971

The following countries have expressed an interest in operating an earth station but have not announced definite plans:-

ATLANTIC REGION

1. Barbados
2. Belgium
3. Bolivia
4. Central America (location not known)
5. Congo (Kinshasa)
6. East Africa (Kenya) #2
7. Kuwait #2
8. Malagasy Republic
9. Paraguay
10. Uruguay
11. Yugoslavia

PACIFIC REGION

Indonesia

INDIAN OCEAN REGION

Ceylon
South Africa

COUNTRIES SERVED WITHOUT USING A CANADIAN GATEWAY OFFICE

The following countries are served by the Trans-Canada Telephone System via the U.S.A., A.T. and T. overseas network. The Canadian Toll Center operator forwards the call to the American Gateway office for ticketing and handling. The Physical route of the actual circuits used are those normally used by the Toll Center to reach the gateway shown.

Country	Only Route Via Foreign Gateway Office At
Angola	New York
Azores	" "
Bolivia	" "
British Honduras	Jacksonville
Cape Verde Islands	New York
Colombia	" "
Costa Rica	Jacksonville
Cuba	Miami
Ecuador	New York
Guam	Oakland
Guatemala	Jacksonville
Haiti	Jacksonville
Honduras	Jacksonville
Indonesia	Oakland
Luzon Island	Oakland
Madeira Islands	New York
Mindanao Island	Oakland
Mozambique	New York

COUNTRIES SERVED WITHOUT USING A CANADIAN GATEWAY OFFICE

Country	Only Route Via Foreign Gateway Office At
Netherlands Guiana	New York
Nicaragua	Jacksonville
Panama	New York
Peru	" "
Philippines	Oakland
Salvador, El.	Jacksonville
Saudi Arabia	New York
Surinam	" "
Venezuela	" "

The following countries are reached over A.T.&T. overseas network facilities but the tickets are written and the route is dialed by the Originating Toll Center operator. The Physical route of the actual circuits used are those normally used by Toll Center to reach the "gateway" shown.

Country	Physical Circuit Route Is Via Foreign Location At
Bahamas	Jacksonville - Nassau
Dominican Republic	Jacksonville - Santo Domingo
Midway	Sacramento - Honolulu
Virgin Islands	Jacksonville - Charlotte Amalie
Wake	Sacramento - Honolulu

Some Aspects of Foreign Ownership
and Interest

The Project Team also gave consideration to some questions, outside its original terms of reference, posed by Professor Hugh Lawford, of Queen's University, as follows:

"Foreign Exchange and other Laws for the Protection of Balance of Payments and their Application to International Communications.

What techniques can be devised to frame laws based on adequate assessments of cross-subsidization among various communication activities? Can laws require complete financial disclosures by companies operating multi-nationally?"

Professor Lawford furnished the following four-part elaboration of this question.

Part I

"What agreements are there between Canadian and U.S. common carriers for the provision of technical advice and know-how, or for the conducting of research and development, or for the licensing of patents? Do any agreements have the effect that one class of telephone users -- for example, normal telephone subscribers -- is subsidizing another class of telephone users -- for example, computer service bureaus insofar as they demand development of new techniques or new hardware? Do any agreements have the effect that users in one country subsidize research or development primarily of benefit to users in the other country? What effect have relationships between carriers in Canada and the United States upon the balance of payments between the two countries?"

Part 2

"Where the bulk of common carrier revenue is based upon long distance charges, and where the calls normally are placed between Canada and the United States, what system now exists for apportioning revenues between U.S. and Canadian carriers? Does this take account of the fact that the provision of new facilities -- for example, new lines to a newly developed mining area or tourist area -- may fall upon the Canadian carrier almost exclusively? For example, the extension of telephone services to cottages in some

remote areas of Canada results primarily in generating long distance calls by the American tourists back to the United States. Is Canada a net loser on providing these additional facilities? "

Part 3

"Do Canadian-American military activities requiring telecommunications have the effect that military expenditures subsidize the extension of telephone service into remote areas, or subsidize the development of new communications techniques?"

Part 4

"Where a Canadian carrier is a subsidiary or is wholly or partially controlled by a foreign company, what legal powers do Canadian governments have to require disclosures of financial transactions by the parent or controlling company or between parent and subsidiary company?"

TCTS and CN/CP examined these questions and their views are summarized as follows.

The British Columbia Telephone Company and Quebec Telephone have service agreements with their U.S. parent organization, General Telephone & Electronics Corporation. Bell Canada has a similar service agreement with AT & T in the U.S. These agreements provide the Canadian companies with technical advice, consultations, engineering assistance, and operating and maintenance practices. There are no R&D agreements between Canadian and U.S. telephone companies but cross-licensing and cross-patenting exists between Canadian and U.S. Manufacturers of telecommunications equipment. CN/CP have no agreements with any U.S. carrier other than for traffic routing and handling, and division of revenues.

Dealing with the question of cross-subsidization, the Canadian carriers say there are no agreements causing one class of service to subsidize another.

CN/CP consider that their payments to U.S. carriers (not in excess of \$200,000 annually) have very little effect on the balance of payments between Canada and U.S. TCTS relationships with AT & T have resulted in a division of revenue which TCTS consider to be reasonable and satisfactory.

The question about the apportionment of revenue between Canada and U.S. carriers is covered in general terms in the Telecommission Project 3E Report under the section entitled "Settlements".

The telephone industry believes that the net effect of providing service to American tourist cottages would be beneficial to Canada. In some cases, extension of service to these locations is undertaken through a contribution from the customer, as in cases where new facilities involve substantial expenditure for private business concerns, e.g. in mining areas or remote tourist areas where adequate revenue prospects are not good. Canadian and U.S. military requirements have helped extend facilities into remote areas earlier than otherwise would have been the case. Construction charges to the military are proportioned in cases where commercial potential is foreseen or commercial usage of such facilities occurs.

Project Team members were not able to say what legal powers enable the Canadian Government to require disclosure of financial transactions by the parent, subsidiary or controlling companies. This is a matter for review by legal experts.

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